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Order Syngnathae

Maxillary near or close to premaxillary, again solidly united though with distinct sutures. Articular bone of lower jaw with small supplemental bone. Lower pharyngeal bones completely united. Branchiostegals 9 to 15. Vertebral numerous, 45 to 70, abdominal more numerous than caudal. Ribs begin on first vertebra. Scapula suspended to cranium by posttemporal bone, which slender and forked. Air bladder large. Intestinal canal simple, without pyloric appendages. Lateral line low or along lower side of body, concurrent with ventral profile



Tenthia atramentatus Jordan and  
Evermann, Bull. U. S. Fish Comm., vol.  
 22, 1902 (1903), p. 198. Honolulu.

Hepatus atramentatus Fowler and Ball,  
 Bishop Mus. Bull., no. 26, 1925 (1926), p. 19  
 (Laysan).

Tenthia matoidea (part) Jenkins, Bull.  
 U. S. Fish Comm., vol. 22, 1902 (1903), p. 478  
 (Honolulu). — Jordan and Evermann, l.c.,  
 vol. 23, pt. 1, 1903 (1905), p. 387 (Honolulu).

Hepatus nigricans (part) Jordan and Seale,  
 Bull. Bur. Fisher., vol. 25, 1905 (1906), p.  
 351 (Apia).

Hepatus elongatus (part) Jordan and Seale,  
 l.c., p. 352 (Apia).

Tenthia elongatus (~~from Lacépède~~) Kendall  
 and Goldborough, Mem. Mus. Comp.  
 Zool., vol. 26, no. 7, 1911, p. 308 (Trich).



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of body, of peculiar structure  
and often not quite reaching  
caudal. Fins without spines.  
No adipose fin. Ventrals  
abdominal, rays more than 5.

A large group of fishes,  
well represented in all tropical  
seas. According to Regan they  
comprise an isolated assemblage  
without evident relationship to  
any other fishes though showing  
certain affinities with the  
toothed minnows or cyprinodonts.  
In earlier taxonomic arrangements  
of fishes the Syngnathii  
marked the beginning of the  
series Physoclisti, characterized  
by the absence of a duct connecting  
the air bladder with the



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Heniochus acuminatus (Linnaeus).

Chaetodon acuminatus Linnaeus, Syst. Nat.,  
ed. 10, 1758, p. 272. Indies. — Linnaeus, l.c.,  
ed. 12, 1766, p. 460. — Gmelin, Syst. Nat.  
Linna., 1789, p. 1241 (India). — Walbaum, Arted.  
Pisc., vol. 3, 1792, p. 410 (on Linnaeus). —  
Forster, Ann. Indica, 1795, p. 14. — Schneider,  
Syst. Ichth. Bloch, 1801, p. 229 (India). —  
Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp.  
455, 479 (on Linnaeus).

Chetodon acuminatus Bonnaterre, Tabl. Ichth.,  
1788, p. 80 (Indies).

Heniochus acuminatus Cuvier, Hist. Nat. Poiss.,  
vol. 7, 1831, p. 74<sup>98</sup> (copied). — Jordan and  
Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1,  
1903 (1905), p. 376, plate 55 (Hawaii). —  
Evermann and Seale, Bull. Bur. Fisher., vol.  
26, 1906 (1907), p. 87 (Bulan, San Fabian). —  
Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 510



alimentary canal. In contrast  
were the more primitive groups  
of bony fishes or Physostomi,  
all with a persistent duct.



8387. Port Dupon, Leyte Island.  
March 17, 1909. Length 192 mm.

A 701 and A 702. Si Amil Island.  
September 26, 1909. Length 225 to 227 mm.  
7706. Ilugan Bay near Rita Island.  
December 29, 1909. Length 173 mm.

A 1153 and A 1154. Game Road, Gillolo  
Island. December 1, 1909. Length 152 to 170 mm.

A 1598. Soo Wan, Formosa. January 29, 1910.  
Length 200 mm.



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Analysis of Suborders

a.<sup>1</sup> mouth usually large; third upper pharyngeals moderately enlarged, separate, fourth usually present; scales very small.

Scombrocoidea.

a.<sup>2</sup> mouth small; third upper pharyngeals strongly enlarged, together forming somewhat convex ovoid plate; scales rather large.

Eyoctoidea.



and all of caudal fin cadmium orange, becoming slightly dusky toward tips of soft rays; scales below dorsal posteriorly black, especially marginally, center of each with steel bluish area, becoming smaller lower down toward anal base. Front and vertical edge of anal purplish black. Pectoral base blackish, including all ray bases and all of scaly portion, rest lemon yellow. Ventral black.

8717. Batan Island, Rapurapu Island.  
June 5, 1909. Length 185 mm.

A963 and A964. Binang Anang Island.  
November 17, 1909. Length 210 to 219 mm.

8239. Galvaney Island, Ragay Gulf.  
March 9, 1909. Length 238 mm.

9348. Murcielago Bay, Mindanao. April  
21, 1909. Length 180 mm.



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Sub Order Scombrocoidea

Mouth typically large, jaws usually extended and narrowed forward. Rami of mandible usually united by interlocking of row of inner extensions. Maxillaries firmly joined with premaxillaries. Third upper pharyngeals moderately enlarged, separate, fourth usually present. Lower pharyngeal triangular or long and narrow. Pharyngeal teeth usually villiform or granular, some of teeth of principal plates often compressed, tricuspid. Scales small.



8148, 8149, 8162 (No. 67,354, U.S.N.M.  
Type). Alibijaban Island, Ragay Gulf,  
Luzon. Length 217 to 220 mm. Interorbital  
below horns and still lower white,  
slightly dusky before cheek. Bar from  
front of dorsal downward includes all  
of head posteriorly except opercle tip and  
all of breast to ventral bases silvery white,  
upper portion slightly dusky with somewhat  
brassy tinge. Third dorsal spine gray,  
color continued as lighter band diagonally  
across side through middle of anal.  
First 2 dorsal spines black, color passes  
downward to include all of ventral bases  
and all of abdominal region darker,  
scales margined darker brown with  
pearly or purplish centers. Dorsal from  
tip of fifth spine to base of sixth and  
diagonally along its basal edge, including  
upper and posterior caudal peduncle.



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Analysis of Families

a.<sup>1</sup> no finlets. Belonidae.

a.<sup>2</sup> Dorsal and anal with detached  
finlets. Scombresocidae.



$1\frac{2}{3}$  to  $1\frac{2}{3}$  in head; A. III, 16, I or 17, I,  
 third spine  $1\frac{3}{5}$  to  $1\frac{4}{5}$ , fourth ray  $1\frac{1}{8}$  to  
 $1\frac{1}{4}$ ; least depth of caudal peduncle 3 to  
 $3\frac{1}{8}$ ; caudal truncate, slightly convex  
 behind with age,  $1\frac{2}{5}$  to  $1\frac{3}{5}$ ; pectoral  
 1 to  $1\frac{1}{8}$ ; ventral 1 to  $1\frac{1}{5}$ .

Largely dark brown. Pale or whitish  
 band from middle of interorbital down  
 over nostrils to chin, where broader. Lips  
 similarly pale. Broad pale to whitish  
 vertical band from predorsal above  
 tubercle down including greater post-  
 ocular region to chest, where greatly  
 widened down to ventrals. Dorsals,  
 caudal and pectorals all pale to  
 whitish. This leaves large median area  
 of body dark with its front and  
 hind marginal sections as broad  
 blackish bands, including below vent-  
 rals and anal; inner margins of



Family Belonidae

Body greatly elongate, very slender, compressed or not. Both jaws extended into beak, lower longer, still longer in young. Maxillaries grown fast to premaxillaries. Each jaw with band of small sharp teeth, besides series of longer wide set sharp conical teeth. Vertebrae 55 to 77, precaudal with strong projections to which ribs attached. Air bladder present. Ovary single. Scales very small, thin. Dorsal and anal far postmedian, rather long.



opposite. No finlets.

Carnivorous surface fishes, in many ways suggestive in superficial manner to the gar pikes. Found in all warm seas, some entering fresh water. In habits they somewhat resemble pikes, though when disturbed, or so inclined, are able to swim along the surface of the water with great rapidity, some even leaping and skipping out short distances. In the tropics when thus leaping the large species are sometimes dangerous to fishermen. They have even



been known to pierce the naked abdomens of savages.

In life all are with more or less green tints or colors, which penetrate to the bones and even the flesh. When cooked, however, the flesh becomes whitish and is well flavored. When available gars are valuable food fishes. Their sides are brilliant shining silvery or silvery white - or they may have a silvery lateral band from the head to the base of the tail fin.

Most of the gars are furnished with a dorsal lappet over the iris, serving to protect them from brilliant sunlight. The development of the beak is variable, sometimes only the lower jaw in young being prolonged, again the jaws may be subequal or they may even black lateral mandibular flaps in the young. The tail rounded or truncate in the young becomes lunated or forked in some forms.

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Gars swim at or near the surface offshore, in tidal currents, or in the open sea. In spite of their enormous jaws and terrible armament of needlelike teeth, gars can prey only on comparatively small fishes, since the gullet is too narrow to permit swallowing fish of any size. Silversides (Atherinidae), anchovies (Engraulidae), sardines (Clupeidae), young caesios, and other small slender fishes seem to comprise the bulk of their food, at least around the reefs of the Sulu and Celebes Seas. If a half stick of dynamite is fired near a wharf in the Sulu Archipelago large numbers of silversides are always killed or stunned. At once several large gars will appear like magic from the stream, where their green backs harmonize perfectly with the color of the water, and in an incredibly short time they will snap up all the floating silversides and other small disabled fishes.



Gars swim with an undulating motion of the body and are exceedingly active. When startled they move with astonishing speed and may leap from the water several times or may skip over the surface in gigantic leaps like a ricocheting flat stone, or may rise out of the water until only the tail or posterior part of the body is left in it, just as a modern speed boat travels, shooting forward with incredible swiftness and all but flying. It sometimes happens on such occasions that a whizzing gar strikes a person with its hard bill which penetrates like an arrow, inflicting dangerous wounds, horribly lacerating the abdomen, or causing death. A snapping gar may also inflict very severe lacerations with its large needlelike teeth. (Herre.)



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Analysis of Genera

- a. Strongylurinae. Gill rakers absent or vestigial; enlarged teeth of both jaws strong spaced canines.
- b. Lower pharyngeal elongate, narrow, dentigerous plate scarcely expanded posteriorly; second and third upper pharyngeals dentigerous, fourth usually distinct and dentigerous.
- c. Body well compressed.
- d. Beak comparatively stout, moderate. Strongylura.
- d.<sup>2</sup> Beak very elongate, slender. Rhaphiobelone.
- c.<sup>2</sup> Body strongly compressed, band like. Ablennes.
- b.<sup>2</sup> Lower pharyngeal small, narrow, pointed or rounded at both ends; only 1 pair of dentigerous upper pharyngeals, the third; fresh waters of India and East Indies. Xenentodon.



a<sup>2</sup> Beloninae. Gill rakers present;  
jaws comparatively slender; upper  
enlarged teeth moderate, lower small  
and close set; lower pharyngeal  
triangular, second and third upper  
dentigerous, fourth usually distinct  
and dentigerous. Belone.



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Genus Strongylura Van Hasselt  
Strongylura Van Hasselt, Bull. Sci.  
Nat. Ferrussac, sect. 2, vol. 2, p. 374,  
1824. (Type Strongylura caudi-  
maculata Van Hasselt = Belone  
strongylura Van Hasselt, virtually  
tantotypic.)

Tylosurus Cocco, Giorn. Sci. Lett. Sicil.,  
vol. 42, no. 124, p. 18, 1833. (Type  
Tylosurus cantrani Cocco =  
Sphyræna acus Lacépède, monotypic.)

Stenocaulus Ogilby, Proc. Roy. Soc.  
Queensland, vol. 21, p. 91, 1908.  
(Type Belone breffiti Günther,  
orthotypic.)



20

Thalassosteus Jordan, Evermann and  
Tanaka, Proc. Cal. Acad. Sci., ser.  
4, no. 20, vol. 16, p. 651, Nov. 14, 1927  
(Type, Belone appendiculatus  
Klunzinger, orthotypic.)

Busuanga Herre, Science, vol. 71,  
p. 132, <sup>1930</sup> (Type, Tylosurus philippinus  
Herre, ~~synonym~~ orthotypic.)



Strongylura robusta (Günther)

Belone robusta Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 242, 1866

(type locality: Red Sea; Egypt). —

Regan,

Ann. Natal. Mus., vol. 1, pt. 3, 1908,

p. 243 (Kosi Bay).

Belone robustus Klunzinger, Verh. zool.  
bot. Ges. Wien, vol. 21, p. 579, 1871  
(Red Sea).

Tylosurus robustus Regan, Ann. Mag.  
Nat. Hist., ser. 8, vol. 7, p. 332, 1911  
(name). — Gilchrist and Thompson,

Ann. Durban Mus., vol. 1, pt. 4, p. 310,

1917 (compiled).



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Body very slender, cylindrical or little compressed. Head long. Both jaws extended as beak, lower somewhat longer, much longer in young and very young often resemble hemiramphids. Each jaw with band of small, sharp teeth, besides series of longer, wide set, sharp, conic, unequal teeth. No teeth on vomer or palatines. Gill openings wide. Gill rakers absent. Bones usually greenish. Scales small to very small, thin. Lateral line inferior, runs along lower side of belly, sometimes forming elevated keel on caudal peduncle. No finlets. Dorsal fin mostly elevated in front, somewhat or even considerably behind anal, all rays of both fins connected by membranes. Caudal short, unequally lunated or forked, truncate or rounded. Pectorals moderate. Ventrals small, latter inserted behind middle of body.



Genus Petalichthys Regan  
Petalichthys Regan,



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<sup>largest</sup> Rather large voracious fishes,  
reaching a meter and a half in length,  
in most all tropical seas, a few  
entering rivers. In these gars the  
changes with age are marked, as  
in the young the greatly prolonged lower  
jaw is always longer, though less so  
with age.

Herre says the larger species are  
much feared by fishermen, as when  
frightened they may skip along the  
surface of the water at terrific  
speed, hurtling through the air in  
great leaps and inflicting frightful  
injuries upon or even killing  
anyone unlucky enough to be in their  
way. They also damage small nets,  
through which they easily tear their  
way.



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Three nomina nuda have been given  
for Queensland species by Saville Kent:

Strongylura staigeri (Saville-Kent)

Belone staigeri Saville-Kent, Great Barrier  
Reef, p. 370, 1895 (type locality: Queensland).  
Tylosurus staigeri McCulloch, Austral. Mus.  
Mem., vol. 5, pt. 1, p. 100, June 29, 1929 (reference).

Strongylura tyrannus (Saville-Kent).

Belone tyrannus Saville-Kent, Great Barrier  
Reef, p. 370, 1895 (type locality: Queensland).  
Tylosurus tyrannus McCulloch, Austral. Mus.  
Mem., vol. 5, pt. 1, p. 100, June 29, 1929 (reference).

Strongylura vorax (Saville-Kent).

Belone vorax Saville-Kent, Great Barrier  
Reef, p. 370, 1895 (type locality: Queensland).  
Tylosurus vorax McCulloch, Austral. Mus.  
Mem., vol. 5, pt. 1, p. 100, June 29, 1929 (reference).



Analysis of species

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a. End of mandible without terminal keel below.

b. Strongylura. Caudal truncate, rounded behind with age, lateral line not forming keel on caudal peduncle.

c. D. II, 10 to II, 13; A. II, 13 to II, 15.

d. Scales 125; no caudal spot.

d.<sup>2</sup> Scales 170; caudal with black basal spot. uvillii.

c.<sup>2</sup> D. II, 14 to II, 18; A. II, 17 to II, 23. strongylura.

e. Body subcylindrical or compressed.

f. Head  $2\frac{1}{2}$  to  $2\frac{7}{10}$ . incisa.

f.<sup>2</sup> Head  $2\frac{4}{5}$  to  $3\frac{1}{4}$ .

g. Scales 185 to 200. leura.

g.<sup>2</sup> Scales 300. tahitiensis.

e.<sup>2</sup> Body strongly compressed. breffti.

b.<sup>2</sup> Tylosurus. Caudal forked (emarginate or nearly truncate in young); lateral line forms keel on caudal peduncle.

h. Last dorsal rays not elongated or black.

i. Caudal peduncle wide as deep.



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$j.^1$  D. II, 17 or II, 18; A. II, 18; eye  $2\frac{1}{3}$  in postocular. groeneri.

$j.^2$  D. II, 18 or II, 19; A. II, 17 to II, 19; eye 3 in postocular. macbayanana.

$j.^3$  D. II, 19; A. II, 22 to II, 24.

$k.^1$  Eye 2 in postocular. terebra.

$k.^2$  Eye  $3\frac{1}{2}$  in postocular.

ferox.

$j.^4$  D. II, 23 or II, 24; A. II, 20 or II, 21; eye 2 to  $2\frac{1}{4}$  in postocular.

$l.^1$  Mandible tip little or not projecting. timucoides.

$l.^2$  Mandible tip protruded pad, its upper profile continuous with that of upper jaw profile. philippina.

$i.^2$  Caudal peduncle deeper than wide.

m.<sup>1</sup> D. II, 17; A. II, 21 to II, 24.

anastomella.

m.<sup>2</sup> D. II, 19 to II, 21; A. II, 18 or II, 19.

n.<sup>1</sup> Eye 2 in postocular.

crocodila.

n.<sup>2</sup> Eye  $2\frac{3}{5}$  to  $2\frac{4}{5}$  in postocular. punctulata.



(26)

m.<sup>3</sup> D. II, 20; A. II, 21; eye 2  
in interorbital. gavialoides.

m.<sup>4</sup> D. II, 22; A. II, 20; eye  
1 1/4 in interorbital. auliceps.

h.<sup>2</sup> Last dorsal rays elongated,  
black. indica.

a.<sup>2</sup> Thalassosteus. End of mandible with  
small deep terminal keel below.

appendiculata.



Strongylura wvillii (Valenciennes)

Belone wvillii Valenciennes, Hist.  
Nat. Poiss., vol. 18, p. 444, 1846 (type  
locality: Vanicolo). — Günther, Cat.  
Fishes Brit. Mus., vol. 6, p. 247, 1866  
(copied); Journ. Mus. Godeffroy,  
vol. 8, pt. 16, p. 350, 1909 (copied).

Tylosurus wvillii Whitley, Journ.  
Pan Pacific Inst., vol. 3, No. 1, p. 11,  
Jan. - March 1928 (Santa Cruz  
Island).

Strongylura wvillii Fowler, Mem.

Bishop Mus., vol. 10, p. 72, 1928  
(compiled); vol. 11, no. 5, p. 319, 1931  
(compiled).



9950, 9951. Doc Can, Island,  
Sulu Sea. January 7, 1910. Length  
128 to 138 mm.

52528 U. S. N. M. Apia, Samoa.  
Bureau of Fisheries. Length 128 to  
193 mm. 4 examples.

75899 U. S. N. M. Borneo. H. C.  
Raven. Length 189 mm.

31668 to 31672 A. N. S. P. Apia.  
Bureau of Fisheries. Length 138  
to 183 mm.



Belone macrolepis Bleeker, haturk.  
Tijds. Nederl. Indië, vol. 12, p.  
 (217) 225, 1856 (type locality: hias);  
 vol. 13, p. 374, 1857 (Sangi). —  
Günther, Cat. Fishes Brit. Mus.,  
 vol. 6, p. 246, 1866 (type). — Meyer,  
Anal. Mus. Esp. Hist. Nat. Madrid,  
 vol. 14, p. 38, 1885 (Manado).

Mastacembelus macrolepis Bleeker,  
Atlas Ichth. Ind. Néerl., vol. 6,  
 p. 45, pl. ( ) 258, fig. 1, 1866-72  
 (hias).

Gylosurus macrolepis Weber and Beaufort,  
Fishes Indo Austral. Archip., vol. 4,  
 p. 122, 1922 (hias). — Herre, Philippine  
Journ. Sci., vol. 36, no. 2, p. 222, June  
 1928 (Zamboanga; Gingoog; Agusan River  
mouth).



12448, 12449. Bugsuk Island.

January 5, 1909. Length 157 to 170 mm.

17404, 17405. Candaraman Island.

January 4, 1909. Length 175 to 177 mm.

19980. Cebu market. September 3,

1909. Length 94 mm.

10554, 13206. Jolo Island.

March 7, 1908. Length 143 to 203 mm.

11281, 17650, 17651. Pandanon Island. March 23, 1909. Length 138 to 141 mm.

15919. Pangasinan Island, Jolo. February 13, 1908. Length 179 mm.

18605. Tambun Sigambul, Tonguil Island, south of Zamboanga. September 14, 1909. Length 188 mm.

8216, 19830. Tataan. February 20, 1908. Length 108 mm.



29

Mastacembelus crocodilus (not Le  
Sueur, Nederl. Tijds. Dierk., vol.  
3, p. 266, 1866 (Java, Singapore,  
Celebes, Moluccas).

Mastacembelus chorum (not Rüppell)  
Bleeker, Atlas Ichth. Ind. Néerl.,  
vol. 6, p. 47, pl. ( ) 256, fig. 2,  
1866-72.

Tylosurus leuroides (not Bleeker)  
Seale and Bean, Proc. U. S. Nat.  
Mus., vol. 33, p. 240, 1907 (Zamboanga).



Therapon brachycentrus Peters,  
Monatsber. Akad. Wiss. Berlin, 1869,  
p. 704 (on Peters 1864).

Therapon (Datria) brachycentrus  
Bleeker, Atlas Ichth. Ind. Néerl.,  
vol. 7, 1873-76, p. 115 (copied).

Depth  $2\frac{1}{2}$  to  $2\frac{3}{4}$ ; head 3 to  $3\frac{1}{6}$ ,  
width  $1\frac{7}{8}$  to 2. Snout  $3\frac{1}{4}$  to  $3\frac{1}{2}$   
in head; eye  $3\frac{2}{3}$  to 4,  $1\frac{1}{8}$  to  $1\frac{1}{3}$   
in snout, greater than interorbital  
in young to equal with age;  
maxillary reaches eye or  $\frac{1}{5}$  in eye,  
expansion 2 to  $2\frac{1}{5}$ , length 3 to  $3\frac{1}{4}$   
in head; teeth villiform, in  
moderately wide bands in jaws,  
outer row little enlarged; interorbital  
 $3\frac{3}{4}$  to  $3\frac{4}{5}$ , nearly flat; preopercle  
edge finely serrated. Gill rakers  
9 or 10 + 18 or 19, lanceolate,  $\frac{1}{2}$  of  
gill filaments and latter  $1\frac{3}{5}$  in eye.



Depth 14 to  $16\frac{3}{4}$ , body robust, largely cylindrical, caudal peduncle compressed; head  $2\frac{1}{5}$  to  $2\frac{1}{3}$ , width  $7\frac{1}{5}$  to  $8\frac{1}{3}$ . Snout  $1\frac{2}{5}$  in head from snout tip; eye  $11\frac{1}{8}$  to 13,  $7\frac{4}{5}$  to  $8\frac{4}{5}$  in snout, 1 to  $1\frac{1}{6}$  in interorbital; maxillary reaches  $\frac{1}{5}$  to  $\frac{1}{4}$  in eye, length to front point 2 to  $2\frac{3}{4}$  in head posteriorly; canines inclined little posteriorly; interorbital  $10\frac{3}{4}$  to 4, level, with moderate and rather deep median groove.

Scales 112 or 113 in lateral axial series to caudal base and 8 or 9 more on latter; 80 to 92 predorsal forward to occiput; 12 or 13 on postocular to hind preopercle edge; 10 above lateral line to dorsal origin. Scales with 52 to



50663 U.S.N.M. Hilo, Hawaii.

Bureau of Fisheries. Length 340 mm.  
As Etelis courus.

52812 U.S.N.M. Hawaiian Islands.

Bureau of Fisheries. Length 280? mm.  
As Etelis courus.

3 examples A.N.S.P. Honolulu.

1922. Henry W. Fowler. Length 250 to  
400 mm.



86 basal parallel circuli, absent apically.

D. II, 11 or II, 12, first branched ray 5 to  $5\frac{1}{5}$  in total head length; A. II, 14, first branched ray  $4\frac{1}{5}$  to  $4\frac{3}{5}$ ; least depth of caudal peduncle  $1\frac{1}{8}$  to  $1\frac{1}{5}$  in eye; caudal  $3\frac{4}{5}$  to  $4\frac{1}{4}$  in total head, truncate behind; pectoral 4 to  $4\frac{1}{8}$ ; ventral  $6\frac{1}{3}$  to 7, reach  $1\frac{3}{4}$  to 2 to vent.

Back brown, also head above. Sides and lower surfaces paler to whitish, with silvery tinge. Fins all pale brownish, with dark neutral gray blotch at pectoral basally and more vivid inside fins. On membranes close to each fin ray and on fin ray itself median dusky area, often as blackish bordering line.



silvery reflection. Iris pale yellowish brown. Fins all pale or very light in color.

Mauritius, Bourbon, Reunion, Seychelles, Japan, Hawaii. Also in the Atlantic (West Indies.) A large and valued food fish, brilliant red in life, reaching a length of 1018 mm. With age the caudal lobes prolonged slender points.

50662 U.S.N.M. Honolulu, Bureau of Fisheries. Type of Etelis corrus.



East Indies, Philippines,  
Vanicolo, Santa Cruz Island.

~~Previously known~~ Well figured by  
Bleeker and allied with Strongylura  
strongylura, though distinguished  
chiefly by its larger scales and  
the caudal fin without the  
conspicuous median basal black  
spot.

5167, 5168, 6114. Iloilo market,  
Panay. June 1, 1908. Length 288 to  
375 mm.

A442. Manila market, Luzon.  
March 14, 1908. Length 321 mm.

Two examples. River at Pasacao,  
Luzon. March 4, 1909. Length 183 to  
208 mm.



than gill filaments or  $2\frac{1}{3}$  in eye.

Scales 46 to 48 in lateral line to caudal base and 5 to 8 more on latter; 6 or 7 scales above lateral line, 12 or 13 below, 17 to 20 predorsal, 6 rows on cheek. Suprascapula denticulate. Scales with 6 or 7 basal radiating striae; apical denticles 53 to 88, short points, with 0 to 9 transverse series of basal elements; circuli fine.

D. X, 11, V, third spine  $1\frac{3}{4}$ <sup>to 2</sup>, in total  $\equiv$  head length, first ray 3 to  $3\frac{1}{4}$ ; A. III, 8, V, third spine  $3\frac{1}{4}$  to  $3\frac{4}{5}$ , first ray  $2\frac{4}{5}$  to 3; least depth of caudal peduncle  $3\frac{2}{5}$  to  $3\frac{3}{5}$ ; pectoral  $1\frac{1}{10}$  to  $1\frac{1}{4}$ ; ventral  $1\frac{2}{5}$  to  $1\frac{3}{5}$ ; caudal  $2\frac{1}{4}$  to  $2\frac{3}{4}$  in rest of body, deeply forked, lobes ending in long slender points.

Brown, little paler below, with



U. S. N. M. No. 57906. Zamboanga.  
Dr. E. Mearns. Length 168 to 175 mm.  
As Tylosurus leuroides. Two examples.

U. S. N. M. No. 57949. Zamboanga.  
Dr. E. Mearns. Length 72 to 98 mm.  
As Tylosurus leuroides. Two examples.

~~U. S. N. M. Nos. 49287 to 49292.~~  
~~Philippines. Commercial Museum~~  
~~of Philadelphia.~~



vol. 23, pt. 1, 1903 (1905), p. 242, fig. 100,  
 pl. 38 (Hilo, Honolulu). — Jordan  
 and Snyder, Bull. Bur. Fisher., vol.  
 26, 1906 (1907), p. 213 (Honolulu).

Depth 3 to  $3\frac{3}{5}$ ; head 3 to  $3\frac{1}{8}$ ,  
 width 2 to  $2\frac{1}{4}$ . Snout  $3\frac{1}{2}$  to  $3\frac{2}{3}$   
 in head from snout tip; eye  $2\frac{7}{8}$   
 to  $3\frac{1}{8}$ , greater than snout or  
 interorbital; <sup>maxillary reaches eye center,</sup> ~~interorbital  $2\frac{1}{2}$  to  $3\frac{1}{5}$ , scarcely~~  
~~elevation, level;~~ expansion 3 to  $3\frac{1}{5}$  in eye, length 2 to  $2\frac{1}{5}$  in  
 head from upper jaw tip;  
~~fronts of~~ each jaw with band of fine  
 teeth and outer <sup>row</sup> band of larger ones,  
 above pair of wide spaced slightly  
 larger us canines; band of small teeth  
 across vomer and on each palatine;  
 interorbital  $3\frac{1}{8}$  to  $3\frac{1}{5}$  in head,  
 scarcely elevated, level; preopercle  
 edge minutely denticulated. Gill  
 rakers  $10 + 14$ , lanceolate, 2 or 3  
 above as rudiments, much greater



Strongylura strongylura (Van Hasselt)

Belone strongylura Van Hasselt,

Algem. Konst- en Letterbode, vol. 1,  
p. 131, 1823 (type locality: Batavia,

Java). — Martens, Preuss. Exped. Ost.

Asien, vol. 1, pp. 235, 325, 1876 (Singapore;

Pontianak). — Day, Fauna British

India, Fishes, vol. 1, p. 421, 1889. —

Weber, Siboga Exped., vol. 57, Fische,

p. 122, 1913 (Makassar).

Belone strongylurus Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 246, 1866 (China;

Pinang; India). — Day, Fishes of India,

pt. 3, p. 512, pl. 118, fig. 6, 1877 (India;



Burma; Calcutta). — Günther,  
Rep. Voy. Challenger, vol. 1, pt. 6, p. 50,  
1880 (Somerset). — Károli, Termesz.  
Füzetek, Budapest, vol. 5, p. 181, 1881  
(Canton). — Sauvage, Bull. Soc. Philom.,  
Paris, ser. 7, vol. 5, p. 107, 1881 (Swatow,  
China). — Weber, Zool. Erg. Reis. Nederl.  
Ost. Ind., vol. 3, p. 456, 1894 (Banka,  
Sumatra, Nias, Java, Madura, Celebes,  
Amboina). — Elera, Cat. Fauna Filip.,  
vol. 1, p. 573, 1895 (Luzon; Cavite;  
Santa Cruz). — Duncker, Mitteil. Natur.  
Mus. Hamburg, vol. 21, p. 169, 1903 (1904)



(Klang, Kuala Lumpur, Jeram?  
 Singapore, Kuala Selangor, Kuala  
 Langat). — Volz, Naturk. Tijds. Nederl.  
 Indië, vol. 66, p. 177, 1907 (Siboga;  
 Palembang). — Duncker, Mitteil. Natur.  
 Mus. Hamburg, vol. 29, p. 257, 1911  
 (compiled). — Regan, Trans. Zool. Soc.  
 London, vol. 20, pt. 6, p. 276, 1914  
 (Mimika River, New Guinea).

Mastacembelus strongylurus Bleeker,  
 Versl. Akad. Wet. Amsterdam, ser. 2,  
 vol. 2, p. 293, 1868 (Rio, Bintang);  
 Atlas Ichth. Ind. Néerl., vol. 6, p. 45,



pl. (11) 257, fig. 3, 1869-72 (Java;  
 Madura; Sumatra; Nias; Pinang;  
 Singapore; Bintang; Banka; Borneo;  
 Celebes; Amboina; New Guinea);  
 Nederl. Tijds. Dierk., vol. 4, p. 149,  
 1873 (reference).

Tylosurus strongylus Rutter, Proc.  
 Acad. Nat. Sci. Philadelphia, 1897,  
 p. 69 (Swatow). — Wu, Contrib. Biol.  
 Lab. Sci. Soc. China, vol. 5, no. 4, p.  
 61, fig. 50, 1929 (Amoy).

Tylosurus strongylus Seale, Philippine  
 Journ. Sci., vol. 5, no. 4, p. 267, 1910.



(Borneo). — Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 7, p. 322, 1911 (name).  
— Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 121, 1922  
(Taluk and Bagan Api Api, Sumatra; Java Sea; Batavia; Sintang, Borneo; Makassar, Celebes). — Herre, ~~Philippine~~  
Journ. Sci., vol. 36, no. 2, p. 220, pl. 1, fig. 2, June 1928 (Bulacan; Manila; Calabanga; Tacloban; Cagayan de Misamis; Davao; Sandakan, Borneo; Amoy, China).



Strongylura strongylura Fowler, Proc.  
Acad. Nat. Sci. Philadelphia, 1919,  
p. 3 (Philippines). — Fowler and Bean,  
Proc. U. S. Nat. Mus., vol. 71, art. 10,  
p. 4, 1927 (Benkoelan, Sumatra). —  
Fowler, Proc. Acad. Nat. Sci.

Philadelphia, 1927, p. 261 (San Fernando;  
Orani; Philippines); Mem. Bishop  
Mus., vol. 10, p. 72, 1928 (compiled); —  
Hong Kong Naturalist, vol. 3, nos. 3-4, p. 263, fig. 10, Dec. 1932 (Philippines).

Strongylura caudimaculata Van Hasselt,  
Bull. Sci. Nat. Ferrussac, Zool., 1823,  
p. 374 (type locality: Java). — Chu,  
Biol.  
Bull. St. John's Univ., no. 1, p. 86, Jan.



1931 (compiled).

Belone caudimacula Cuvier, Règne

Animal, ed. 2, vol. 2, p. 285, 1829

(on Kuddera A. Russell, Fishes of Coromandel, vol. 2, p. 61, pl. 176, 1803, ✓). — Valenciennes, Hist. nat. <sup>Vizagapatam</sup> Bombay, Aliphey; Pondicherry; Calcutta;

Poiss., vol. 18, p. 452, 1846 (Rangoon).

— Richardson, Ichth. China Japan, p. 264, 1846 (China; Canton).

— Cantor, Journ. Asiatic Soc. Bengal, <sup>Malayan Peninsula</sup>

vol. 18, pt. 1, p. 1228, 1849 (1850) (Pinang).

— Bleeker, Verh. Batavia. Genoot.

(Madura), vol. 22, p. 5, 1849 (Bangcallang,

Kammal); Nederl. Tijds. Nederl. Indië,

vol. 1, p. 160 (Banka), p. 260 (Bandjermassing); <sup>1850</sup>

vol. 2, p. 190 (Bandjermassing), p. 470

(Rio), 1851; vol. 3, p. 54 (Singapore), p.



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409 (Pamangkak; Sampit; Bandjermassing); Verh. Batavia. Genoot.  
(Snoek. Vissch.), vol. 24, p. 12. (Batavia,  
Samarang, Surabaja, Pasuruan), p.  
27 (Singapore, Pinang), 1852; (Bengal.  
Hind.), vol. 25, pp. 8, 72, 1853 (compiled);  
Natuurk. Tijds. Nederl. Indië, vol. 5,  
p. 429, 1853 (Pontianak); vol. 8, p.  
152, 1855 (Bandjermassing); vol. 11,  
p. 419, 1856 (Muntok, Banka);  
vol. 12, p. 217 (Nias), p. 26 (Tikoe),  
1856; Act. Soc. Sci. Ind. Néerl., vol.  
2, no. 7, p. 7, 1857 (Amboina); vol.



3, no. 6, p. 2, 1857-58 (Sinkawang,  
Borneo); vol. 3, no. 9, p. 6 (Siboga),  
p. 7 (Palembang) 1857-58; hat.

Tijds. Nederl. Indië, vol. 16, p. 26  
(Tikoe), p. 434 (Sinkawang and  
Pamangkato, Borneo), 1858; Act.

Soc. Sci. Ind. Nederl., vol. 5, no. 6,  
<sup>1858-59</sup> p. 4<sub>1</sub> (Palembang); vol. 5, no. 7, p. 2, <sup>1858-59</sup>  
(Sinkawang); vol. 8 (Nederl. Sumatra),  
<sup>1859</sup> p. 55<sub>1</sub> (Siboga; Palembang); Naturk.

Tijds. Nederl. Indië, vol. 21, p. 139,  
1860 (Muntok, Bangka); Versl. Akad.

Wet. Amsterdam, vol. 12, p. 64, 1861



(Pinang). — Macleay, Proc. Linn.  
Soc. New South Wales, vol. 5, pt. 2,  
p. 177, 1881 (Port Darwin).

Belone caudimaculata Cuvier, Règne  
~~Animal, ed. 2, vol. 2, p. 285, 1829~~  
~~(Pinang)~~. — Valenciennes, Hist.  
Nat. Poiss., vol. 18, ~~p. 452~~ <sup>reference in</sup> 1846 (table).

~~— Richardson, Ichth. China Japan,~~  
~~p. 264, 1846 (China; Canton).~~ — Cantor,  
Madras Journ. Liter. Sci., 1851, p. 147.

— Day, Fishes of Malabar, p. 164, 1865;  
Proc. Zool. Soc. London, 1865, p. 369 (Cochin, Malabar).

— Günther, Cat. Fishes Brit. Mus.,  
vol. 6, p. 245, 1866 (Amboina; Port



(Károli, Termesz. Füzetek, vol. 5, p. 181, 1881 (Singapore).

Essington). — Meyer, Anal. Soc.

Espan. Hist. Nat. Madrid, vol. 14,  
p. 38, 1885 (Manila Bay; Cebu). —

Weber, Zool. Erg. Reis. Nederl. Ost  
Ind., vol. 3, p. 456, 1894 (Borneo).

— Elera, Cat. Fauna Filip., vol. 1,  
p. 573, 1895 (Luzon; Manila; Rio  
Pasig). — Volz, Zool. Jahrb. Syst.,  
vol. 19, p. 393, 1903 (Sumatra); Nat.  
Tijds. Nederl. Indië, vol. 66, p. 177,

1907 (Siboga; Palembang).

Belone candimaculata

Mastacembelus candimacula Bleeker,  
Nederl. Tijds. Dierk., vol. 2, p. 176,  
194, 1865 (Siam; copied).



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Tylosurus caudimaculatus Jordan  
and Richardson, Bull. Bur. Fisher,  
vol. 27, p. 242, 1907 (1908) (Iloilo);  
Mem. Carnegie Mus., vol. 4, p. 175, 1909  
(Takao, Formosa). — Seale, Philippine  
Journ. Sci., vol. 9, p. 60, 1914 (Hong  
Kong). — Fowler, Copeia, no. 58, p. 62,  
June 18, 1918 (Philippines). —  
Borodin, Bull. Vanderbilt Marine  
Mus., vol. 1, art. 2, p. 46, 1930 (Manila).

Belone saigonensis Sauvage, Bull. Soc.  
Philom. Paris, ser. 7, vol. 3, p. 204, 1878  
(type locality: Saigon, Cochin; Me'Kong in  
fresh water).



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Depth  $15\frac{1}{3}$  to  $16\frac{1}{5}$ , body little compressed, caudal peduncle well compressed; head  $2\frac{1}{3}$  to  $2\frac{1}{2}$ , width  $8\frac{1}{5}$  to  $8\frac{1}{2}$ . Snout  $1\frac{2}{5}$  to  $1\frac{1}{2}$  in head from snout tip; eye  $11\frac{1}{2}$  to  $12$ ,  $8\frac{1}{4}$  to  $9\frac{1}{5}$  in snout, slightly greater to  $1\frac{1}{8}$  in interorbital; maxillary reaches  $\frac{1}{4}$  in eye, length from front point  $2\frac{7}{8}$  to  $3$  in head posteriorly; canines slightly inclined backward; interorbital  $11\frac{2}{5}$  to  $12\frac{1}{2}$ , level, with rather deep median groove).

Scales  $124$  to  $143$  in median lateral or axial series to caudal base;  $85$  to  $103$  predorsal forward to occiput;  $14$  or  $15$  postocular to hind preopercle ridge;  $14$  or  $15$



Jordan and Snyder, Bull. Bur. Fisher.,  
vol. 26, 1906 (1907), p. 213 (specimen from  
Fukaura, Japan).

Depth 3 to  $3\frac{1}{4}$ ; head 3 to  $3\frac{1}{8}$ , width  
2. Snout  $3\frac{1}{3}$  to  $3\frac{1}{2}$  in head from  
snout tip; eye  $3\frac{3}{4}$ ,  $1\frac{1}{10}$  to  $1\frac{1}{8}$  in snout,  
 $1$  to  $1\frac{1}{8}$  in interorbital; maxillary  
reaches to or  $\frac{1}{5}$  in eye, expansion  $2\frac{2}{5}$  to  
 $2\frac{2}{3}$  in eye, length  $2\frac{2}{3}$  to  $2\frac{7}{8}$  in head  
from snout tip; teeth villiform, in  
bands in jaws of 4 or 5 irregular  
series besides an outer enlarged series;  
vomer with broad diamond like patch  
of villiform teeth, also broad patch on  
each palatine; interorbital  $3\frac{1}{3}$  to  $3\frac{4}{5}$ ,  
broadly and slightly convex; preopercle  
edge minutely denticulate and denticles  
little larger around corner; preopercle  
edge with marginal parallel ridges or  
flutings extending to serrae. Gill rakers



above lateral line to dorsal origin. Scales with 16 to 30 circuli, usually obsolete or absent apically.

D. II, 11 or II, 12, first branched ray  $4\frac{3}{4}$  to 5 in total head; A. II, 14 to II, 12, first branched ray  $4\frac{1}{8}$  to  $4\frac{3}{5}$ ; least depth of caudal peduncle  $1\frac{1}{6}$  to  $1\frac{1}{4}$  in eye; caudal  $3\frac{3}{4}$  to 4 in total head, truncate; pectoral  $4\frac{1}{2}$  to  $5\frac{1}{8}$ ; ventral  $6\frac{3}{4}$  to  $7\frac{2}{3}$ , reaches  $2\frac{1}{4}$  to  $2\frac{2}{5}$  to vent.

Brown on back and upper surface of head, lower and under surfaces paler. Usually silvery lateral to axial band, most evident posteriorly and often defined above by dark gray line. Blue black round spot about



p. 151 (Boskin). — Fowler, Bull. Bishop Mus., no. 22, 1925, p. 26 (Honolulu). —

Fowler and Ball, Bull. Bishop Mus., no. 26, 1925, p. 14 (Johnston Island). —

Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 193, pl. 16 B (Honolulu, Johnston Island, type of Bowersia ulaula [not Bowersia virescens]).

Ulaula sieboldi Jordan and Jordan, Mem. Carnegie Mus., no. 1, December 1922, p. 49 (Hawaii).

Chaetopterus dubius Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 345 (on Schlegel, Fauna Japonica, Poiss., dec. 5-6, 1844, p. 78, pl. 37, fig. 2, Japan).

Bowersia ulaula Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 183. Hilo, Hawaii; op. cit., vol. 23, pt. 1, 1903 (1905), p. 237, fig. 98 (type).

Lipsilus microdon (not Steindachner)



size of pupil at caudal base  
medially. Fins otherwise all  
pale brownish. Iris silvery white.

India, Burma, Malaya,  
East Indies, Siam, Philippines,  
China, Formosa, North Australia,  
Queensland.



Pristipomoides filamentosus Barnard,  
Annals South African Mus., vol. 21, pt. 2,  
October 1927, p. 648 ( Natal ).

Serranus mites Bennett, Proc. Comm. Zool.  
Soc. London, vol. 1, 1831, p. 127. Mauritius.

Chaetopterus sieboldii Bleeker, Verhandel.  
Batav. Genootsch. ( Nal. Ichth. Jap. ), vol.  
26, 1857, p. 20 ( on Chaetopterus Schlegel,

Fauna Japonica, Poiss., dec. 5-6, 1844, p.  
78, pl. 37, fig. 2, Japan ). — Regan,

Annals Mag. Nat. Hist. London, series 7,  
vol. 16, 1905, p. 18 ( Inland Sea of Japan ).

Aprion sieboldii Jordan and Snyder,  
Annot. Zool. Japan, vol. 3, pts 2-3, 1901,  
p. 76 ( copied ).

Pristipomoides sieboldii Jordan and  
Richardson, Proc. U. S. Nat. Mus., vol. 39,  
1911, p. 462, fig. 6 ( paratypes of Bowersia

ulaula ). — Izuka and Matsuura,  
Cat. Zool. Spec. Tokyo Imp. Mus., 1920,



Belone saigonensis Sawage seems to be this species, with the following:

Head  $2\frac{2}{3}$ . Eye  $3\frac{1}{2}$  in postorbital, equals interorbital;  $\frac{2}{3}$  of maxillary below preorbital; jaws equal; teeth pointed, strong, none on palate or tongue; supraocular region striate.

Head above scaleless, with deep groove. Scales truncate, caducous.

D. 13, inserted before fourth anal ray, reaches behind anal; A. 15, rays higher than dorsal; free part of tail compressed, much deeper than wide; P. 11, little less than postorbital; V. 6, inserted midway between preopercle and caudal base.

Black spot at caudal base. Yellowish longitudinal band on flanks. Length 400 mm.



21250. Cotabato, below mouth<sup>50.</sup>  
of Mindanao River. May 20, 1908.  
Length 142 mm.

One example. Iloilo market.  
June 1, 1908. Length 93 mm. This  
small example shows the black  
caudal spot also the caudal  
fin subterminally above blackish  
and below or medially largely  
dark brown.

6127. Iloilo market above river.  
June 2, 1908. Length 278 to 288 mm.  
Two examples.

17547. Sorsoyon market. March  
12, 1909. Length 237 mm.

<sup>20393</sup>  
5011, Sandakan Bay, Borneo,  
Dutch East Indies. March 2, 1908.  
<sup>1935</sup>  
Length 290 mm.



Pristipomoides filamentosus (Valenciennes)

Serranus filamentosus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 508. St. Denis, Bourbon; Mauritius.

Anthias filamentosus Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 502 (Mauritius, type of Serranus mitis).

Centropristis filamentosus Klunzinger, Verh. zool. bot. Gesell. Wien, vol. 20, 1870, p. 703 (Red Sea).

Centropristis (Aprion) filamentosus Klunzinger, Fische Roth. Meer., 1884, p. 16.

Etelis filamentosus Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 108, pl. 11, figs. 2-2a (east Madagascar).

Aprion filamentosus Gilchrist and Thompson, Annals South African Mus., vol. 6, pt. 3, 1909, p. 226 (Durban); Annals Durban Mus., vol. 1, pt. 4, 1917, p. 345 (references).



5307 to 5309. Sandakan Bay.<sup>57</sup>  
March 21, 1908. Length 225 to  
235 mm.

5287. Sandakan Bay. March  
31, 1908. Length 190 mm.

~~49489~~



(826  
+  
827)

Iris yellow. Fins rosy or clear  
dorsal with median yellow  
longitudinal band and base  
between each spine and ray silvery  
or yellowish. Lateral line golden  
brownish. my description from a Hawaiian  
example in the Academy.

5256. San Fernando, Union Province,  
Luzon. March 17, 1908. Length 243.5 mm.

13290 A.N.S.P. Hawaiian Islands  
Dr. J. K. Townsend. Length 152 mm.



U. S. P., Nos. 49289 to 49292.  
Philippines. Commercial Museum  
of Philadelphia.



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Holacanthus diacanthus (non Boddart)

Bleeker, Act. Soc. Sci. Ind. Néerl.,  
vol. 2, no. 7, 1857, p. (5) 57 (Amboyna).

Centropyge tutuila Jordan and  
Jordan, Mem. Carnegie Mus., vol. 10,  
no. 1, 1922, p. 62, plate 3, fig. 2. Tutuila  
Samoa.



Strongylura incisa (Valenciennes)  
Belone incisa Valenciennes, Hist.

Nat. Poiss., vol. 18, p. 451, 1846 (type  
 locality: Grand Ocean [Indo Pacific]).

— Günther, Cat. Fishes Brit. Mus.,  
 vol. 6, p. 235, 1866 (copied). — Weber,  
 Siboga Exped., vol. 57, Fische, p. 123,  
 1913 (Biaru Island). — Luncker and  
Mohr, Mitt. Zool. Mus. Hamburg,  
 vol. 42, p. 126, 1926 (Kewieng Insa,  
 New Mecklenburg).

Tylosurus incisus Weber and Beaufort,  
 Fishes Indo Austral. Archip., vol. 4,



p. 125, 1922 (Batavia; Macassar,  
Celebes; Biaru). — Herre, Philippine  
~~not plate~~  
Journ. Sci., vol. 36, no. 2, p. 223, ~~pl. 12~~,  
June 1928 (Polillo, Iba, Estancia,  
Bantayan, Tandubas, Bato Bato;  
Sitanki).

Strongylura incisus Fowler, Mem.  
Bishop Mus., vol. 10, p. 73, 1928  
(compiled); vol. 11, no. 5, p. 319, 1931  
(compiled).



Belone leuroides Bleeker, Natuurk.  
Tijds. Ned. Indië, vol. 1, p. (478) 479,  
 1850 (type locality: Billiton); vol. 3,  
 p. 54, 1852 (Singapore); Verh. Batavia  
Genoots. (Snoek. Vissch.), vol. 24,  
 p. 25, 1852 (Blitong, Billiton; Singapore);  
Natuurk. Tijds. Ned. Indië, vol. 6, p. 90,  
 1854 (Banda, Neira).

Belone leuroides Günther, Cat. Fishes  
Brit. Mus., vol. 6, p. 243, 1866 (type);  
Rep. Voy. Challenger, vol. 1, pt. 6, p. 57,  
 1880 (Hares Harbor, Admiralty Islands).  
 — Schmeltz, Cat. Mus. Godeffroy, no. 8,



p. 7, 1881 (Ponapé); no. 9, p. 37, 1884  
(Ponapé). — Günther, Journ. Mus.  
Godeffroy, vol. 8, pt. 16, p. 352, 1909  
(Admiralty, Pelau, Ponape, Ruk  
Islands).

↑ Belone leuroides Károli, Termesz. Füzetek,  
vol. 5, p. 181, 1881 (Singapore). (Error.)

nat. Kl., vol. 60, pt. 1, p. 510, 1870  
(Singapore).

Mastacembelus leuroides Bleeker, Nederl.  
Tijds. Dierk., vol. 1, p. 272, 1863 (Atapupu,  
Timor); Atlas Ichth. Ind. Néerland.,  
vol. 6, p. 50, pl. (9) 255, fig. 1, 1869-71



p. 7, 1881 (Ponapé); no. 9, p. 37, 1884  
 (Ponapé). — Günther, Journ. Mus.  
 Godeffroy, vol. 8, pt. 16, p. 352, 1909  
 (Admiralty, Pelau, Ponape, Ruk  
 Islands).

Belone (Mastacembelus) leuroides Steindach-  
ner, Sitz. Ber. Akad. Wiss. Wien, math.  
 nat. Kl., vol. 60, pt. 1, p. 570, 1870  
 (Singapore).

Mastacembelus leuroides Bleeker, Nederl.  
 Tijds. Dierk., vol. 1, p. 272, 1863 (Aitapupu,  
 Timor); Atlas Ichth. Ind. Néerland.,  
 vol. 6, p. 50, pl. (9) 255, fig. 1, 1869-71



(Java, Billiton, Singapore, Banda, Timor).

Tylosurus leiuroides Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 493, 1905 (Baram region of Sarawak). — Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 206, 1905 (1906) (Apia, Samoa). — Evermann and Seale, Bull. Bur. Fisher., vol. 26, p. 58, 1906 (1907) (Bacon). — Fowler, Copeia, no. 58, p. 62, June 18, 1918 (Philippines).

Strongylura leiuroides Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1919, p. 5 (Philippines).



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? Belone brachyrhynchos Bleeker,  
Natuurk. Tijds. Nederl. Indië,  
vol. 6, p. (51) 61, 1854 (type locality:  
Singangole, Halmaheira).

Mastacembelus brachyrhynchus  
Bleeker, Nederl. Tijdschr. Dierk.,  
vol. 3, p. 232, ~~pl. ( ) 255, fig. 2~~,  
1866 (type); Atlas Ichth. Ind.  
Néerland., vol. 6, p. 49, pl. ( 9 ) 255,  
fig. 2, 1866-72 (type).

Belone strongylura (not van Hasselt)

Bean and Weed, Proc. U. S. Nat. Mus.,  
vol. 42, p. 592, 1912 (two from Batavia).



? Belone robusta Günther, Cat. Fishes  
Brit. Mus., vol. 6, p. 242, 1866 (type  
locality: Red Sea; Egypt).

Belone robustus Klunzinger, Verh.  
zool. bot. Ges. Wien, vol. 21, p. 579, 1871  
(Red Sea).

Tylosurus robustus Regan, Ann. Mag.  
Nat. Hist., ser. 8, vol. 7, p. 332, 1911  
(name).

Belone strongylura (not Van Hasselt)  
Bean and Weed, Proc. U. S. Nat. Mus.,  
vol. 42, p. 592, 1912 (two from Batavia).

Tylosurus levis (not Bleeker)  
Herre, Philippine Journ. Sci., vol.  
36, no. 2, pl. 2, 1928.



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Depth  $17\frac{3}{4}$  to  $18\frac{1}{5}$ , compressed, tail little more so; head  $2\frac{3}{4}$  to  $2\frac{7}{8}$ , width  $7\frac{4}{5}$  to 8. Snout  $1\frac{2}{5}$  to  $1\frac{1}{2}$  in head; eye  $11\frac{1}{4}$  to  $11\frac{4}{5}$ ,  $7\frac{4}{5}$  to  $8\frac{2}{5}$  in snout,  $1\frac{1}{5}$  to  $1\frac{1}{3}$  in interorbital,  $2\frac{4}{5}$  to 3 in postorbital; maxillary reaches  $\frac{1}{4}$  to  $\frac{1}{3}$  in eye or to front pupil edge; maxillary point to eye  $2\frac{1}{3}$  to  $2\frac{1}{2}$  in rest of head; canines slightly inclined backward; interorbital  $10\frac{1}{4}$  to  $10\frac{1}{2}$  to snout tip, level, with broad median depression.

Scales 185 to 190 in lateral axial series to caudal base; 117 to 120 predorsal forward to occiput; 11 above to dorsal origin. Scales with 25 or 26 + 24 to 27 vertical circuli (striae) each side.



812

8403. [D. 5408.] Capitanillo Light,  
N. 25° W., 20.8 miles (10° 40' 15" N., 124°  
15' E.), between Cebu and Leyte. March

18, 1909. Length 261 mm.

2797. Philippines? Length 192 mm.

9394. Zamboanga market. September 7,

1909. Length 408 mm.

50669 U. S. N. M. Honolulu. Bureau of Fisheries. Type of Bowersia virescens.

51083 U. S. N. M. Hawaiian Islands.

Bureau of Fisheries. Length 255 mm.

As Platyinus microdon.

52686 U. S. N. M. Hawaiian Islands.

Bureau of Fisheries. Length 230 mm.

As Platyinus microdon.

52738 U. S. N. M. Hawaiian Islands.

Bureau of Fisheries. Length 475? mm.

As Bowersia virescens.

68231 U. S. N. M. Naha, Oahu, Riu

Kii. Albatross Collection. Length 260 mm.

Type of Platyinus amoenus.

74602 U. S. N. M. Naha, Oahu.

Albatross Collection. Length 253 and 254



61

D. II, 17 or II, 18; first branched ray  $4\frac{1}{4}$  to 6 in head to snout tip; A. II, 23 or II, 24, first branched ray  $3\frac{4}{5}$  to 4; least depth of caudal peduncle  $1\frac{1}{3}$  to  $1\frac{2}{5}$  in eye; caudal  $3\frac{7}{8}$  to 4 in head to snout tip, truncate, corner rounded; pectoral  $3\frac{4}{5}$  to  $4\frac{1}{4}$ ; ventral  $5\frac{4}{5}$  to  $6\frac{1}{4}$ , reaches  $1\frac{7}{8}$  to 2 to vent.

Back brownish, with grayish (silvery) axial lateral streak. Under surface of body whitish. Iris gray white. Fins brownish, lower ones whitish and no dark caudal spot basally. Pectoral tips blackish.

Singapore, East Indies, Philippines, Polynesia, Melanesia, Micronesia. This species is characterized by its rather large scales and



811

form of the species." Though I cannot deny his contention altogether it seems unlikely this is true. That his figure is like that of Bowersia violascens is certain. Unfortunately he does not give the gill rakers, though his other details are in agreement.

P 2 797:  
Length 192 mm.



62

deep occipital depression, also its long falcate dorsal and anal lobes similar to those of Strongylura crocodila. From that species it differs in its more advanced ventrals, which extend two times to vent and its caudal only shallowly concave behind. From Strongylura leiura it differs chiefly in the larger head, largely due to the very attenuated and slender beak. The head is thus contained about  $2\frac{1}{4}$  to  $2\frac{3}{5}$  times to caudal base, while in S. leiura the head is nearly 3 to  $3\frac{1}{5}$ .

Following Barnard's suggestion it seems to me that Belone robusta is most closely related to if not identical with the present species. Gunther's types were 745 to 770 mm. long with forked caudal fins.



or less silvered tints. Scattered, small, irregular, dark spots on scales of back. Fins all dull brown. Iris light reddish brown.

Queensland, New South Wales, Hawaii.

In my "<sup>10</sup>Fishes of Oceania" I have wrongly included seven examples in the Bishop Museum described under Pristipomoides sieboldii, ~~as the present species~~ but they together with the type of Bowersia violacea, belong with the present species. As McCulloch in his remarks under Lipion roseus says his specimens differ from ~~Bowersia~~ Lipion microlepis Steindachner in the smaller eye and broader preorbital and that "these characters - doubtless alter with age, and as my specimens are much larger than those described by Bleeker, they perhaps represent merely the adult



5784. Baganga Bay, Mindanao.  
May 13, 1908. Length 297 mm.

5642, 5644, 5645. Busin Harbor, Burias  
Island. April 23, 1908. Length 367 to 466 mm.

One example. Canmahala Bay, Ragay Gulf,  
Luzon. March 11, 1909. Length 353 mm. Head  $2\frac{3}{5}$ .

5362. Cebu market. April 5, 1908.  
Length 405 mm.

5745.

5739, 5742, La Generale Island,  
Capunuypugan Point, Mindanao. May 9,  
1908. Length 416 to 465 mm.

5581. San Miguel Harbor, Ticao Island.  
April 21, 1908. Length 528 mm.

U. S. N. M. no. 52364. Apia, Samoa. Bureau  
of Fisheries (04763). Length 598 to 758 mm.  
Two examples.

U. S. N. M. no. 56036.

Bureau of Fisheries (3519). Length 278 mm.



U. S. N. M. No. 72573. Batavia, Java.  
Bryant and Palmer. Length 228 to 241  
mm. Two examples. As Belone  
strongylura.

A. N. S. P., No. 49288. Philippines.  
Commercial Museum of Philadelphia.



65

Strongylura leiura (Bleeker)  
Belone leiurus Bleeker, Natuurk.  
Tijds. Nederl. Indië, vol. 1, p. 94,  
1850 (1851) (type locality: Batavia,  
Java); Verh. Batavia. Genoot. (Snoek.  
Viss.), vol. 24, p. 13, 1852 (Batavia);  
Natuurk. Tijds. Nederl. Indië, vol. 6,  
p. 518, 1854 (Delakan, west Sumatra);  
vol. 7, p. 314, 1854 (Bantem); vol. 8, p. 393,  
1855 (Amboina); vol. 10, p. 348, 1856  
(Rio, Bintang); vol. 13, p. 385 (Batjan),  
p. 480 (Prigi, Java), 1857; Act. Soc. Sci.  
Ind. Néerl., vol. 3, no. 9, p. 3, 1857-58



66

(Padang); Naturk. Tijds. Nederl.  
Indië, vol. 17, p. 143, 1858-59  
(Boleling, Bali); Act. Soc. Sci.  
Ind. Nederl., vol. 8 (Sumatra), p.  
12, 1859 (Benculen). — Kner, Reise  
Novara, Fische, p. 321, 1865 (Nicobars,  
Ceylon, Madras). — Day, Fishes of  
India, pt. 3, p. 511, 1877. — Károli, Termesz.  
Füzetek, vol. 5, p. 182, 1881 (Singapore).  
Belone liurus Günther, Cat. Fishes  
Brit. Mus., vol. 6, p. 250, 1866 (type).  
Belone liura Day, Fauna British India,  
Fishes, vol. 1, p. 420, 1889.



Belone leiurus Volz, Naturk. Tijds.  
Nederl. Indië, vol. 66, p. 177, 1907

(Priaman, Blakan, Padang, Benkulen).

Mastacembelus leiurus Bleeker, Versl.

Akad. Wet. Amsterdam, ser. 2, vol. 2,

p. 294, 1868 (Rio, Bintang); ser. 2,

vol. 7, p. 36<sup>1873</sup> (Aru Islands); Atlas

Ichth. Ind. Néerl., vol. 6, p. 46, pl.

(11) 257, fig. 2, 1869-72 (Java, Bali,

Sumatra, Bintang, Batjan, Amboina).

Gylosurus leiurus Jordan and Evermann,

Proc. U.S. Nat. Mus., vol. 25, p. 329,

1903 (Formosa). — Fowler, Journ.



Acad. Nat. Sci. Philadelphia, ser.  
2, vol. 12, p. 501, 1904 (Padang).

— Jordan and Seale, Bull. Bur.  
Fisher., vol. 26, p. 8, 1906 (1907)

(Cavite). — Seale and Bean, Proc. U.  
S. Nat. Mus., vol. 33, p. 240, 1907

(Zamboanga). — Jordan and Richardson,

Bull. Bur. Fisher., vol. 27, p. 243,

1907 (1908) (Aparri); Mem. Carnegie

Mus., vol. 4, p. 175, 1909 (compiled). —

Weber and Beaufort, Fishes Indo

Austral. Archip., vol. 4, p. 124 (Pulu

Weh; Nias; Batavia, Krawang and



Semarang, Java; Flores; Ambon).  
— Herre, Philippine Journ. Sci.,  
vol. 36, no. 2, p. 225, <sup>(not pl. 2)</sup> June 1928  
(Santa Maria, Manila; Hoihow,  
Hainan).

Strongylura leiura Fowler, Proc. Acad.  
Nat. Sci. Philadelphia, 1919, p. 5  
(Padang); 1927, p. 261 (Philippines);  
Mem. Bishop Mus., vol. 10, p. 72, 1928  
(Guam; Elbon).

? Belone tenuirostris Blyth, Journ.  
Asiatic Soc. Bengal, vol. 29, p. 287,  
1859 (1860) (type locality: Sitang River).



Mastacembelus anastomella (not<sup>70</sup>  
Valenciennes) Bleeker, Nederl.

Tijds. Dierk., vol. 3, p. 24, 1866.

Tylosurus annulatus (not Valenciennes)

Seale, Occas. Pap. Bishop Mus., vol.  
1, no. 3, p. 64, 1900 (1901) (Guam).

Strongylura leiuroides (not Bleeker)

Fowler, Copeia, no. 58, p. 62, June 18,  
1918 (part).

20  
176  
10



71

Depth  $16\frac{3}{4}$  to  $18\frac{2}{3}$ , compressed, caudal peduncle usually deeper than wide; head 3 to  $3\frac{1}{4}$ , width 9 to  $9\frac{1}{2}$ . Snout  $1\frac{2}{5}$  to  $1\frac{1}{2}$  in head; eye  $11\frac{1}{2}$  to 12,  $7\frac{1}{3}$  to  $8\frac{1}{5}$  in snout,  $1\frac{1}{8}$  to  $1\frac{1}{5}$  in interorbital; maxillary reaches  $\frac{1}{4}$  in eye, length to maxillary point  $2\frac{2}{5}$  to  $3\frac{2}{3}$  rest of head; canines slightly inclined posteriorly; interorbital 10 to  $10\frac{1}{4}$  in head to snout tip, level, with broad deep median depression.

Scales 180 to 190 in lateral axial series to caudal base; 170 to 176 predorsal forward to occiput; 14 above lateral line to dorsal origin; 12 to 14 rows on postocular to vertical preopercle ridge. Scales 24 to 28 circuli, obsolete



gives 75. Schlegel thought the color uniform red in a fresh state and gives its length 381 mm. Regan notes an example 230 mm. From the Inland Sea of Japan with a narrow preorbital, 20 lower gill rakers and scales 72, with 8 above and 19 below. With these items as criteria I find nothing except the increased number of scales as distinctive characters for Serranus filamentosus Valenciennes, especially as figured by Sauvage. It is therefore extremely likely the nominal species with narrow preorbital, numerous gill rakers and rather small scales are really one and the same.



apically.

D. II, 17 or II, 18, first branched ray  $5\frac{1}{3}$  to  $5\frac{1}{2}$  in head to snout tip; A. II, 21 or II, 22, first branched ray  $3\frac{3}{5}$  to  $3\frac{7}{8}$ ; least depth of caudal peduncle  $1\frac{1}{8}$  to  $1\frac{1}{4}$  in eye; caudal  $2\frac{4}{5}$  to  $3\frac{1}{2}$  in head to snout tip, hind edge little concave convex; pectoral  $3\frac{2}{5}$  to 4; ventral 5 to  $5\frac{1}{3}$ , reach 2 to  $2\frac{1}{5}$  to vent.

Brown, paler to silvery white below. Well defined silvery lateral band wide as pupil. Iris silvery white. Vertical fins brownish, dorsal and caudal grayish terminally. Other fins whitish. Pectoral dusky to blackish terminally.



Iris light brownish. Dorsals and caudal very pale brownish, other fins whitish.

Red Sea, Natal, Bourbon, Mauritius, Madagascar, Japan, Hawaii. A species known by its narrow preorbital, the space from the angle of the maxillary to the lower eye edge being contained in the eye about  $2\frac{1}{2}$  times in my examples. It is well figured by Sauvage as Etelis filamentosus and Jordan and Evermann as Bowersia ulana. The atypic Chaetopterus of Schlegel is figured with a very narrow preorbital and the last dorsal and anal ray elongated. Though the figure shows but 5 scales above the lateral line and 11 below, it has about  $8\frac{1}{2} + 8$  in its entire course, quite contrary to the statement in the description which



India, Ceylon, Nicobars, Malaya,  
East Indies, Philippines, Hawaiian,  
Formosa, Micronesia.







27,602 and 27,603 A. N. S. P. Padang,  
Sumatra. A. C. Harrison and H. D.  
Hiller. Length 240 to 245 mm.  
When fresh in aracks rosy red,  
becoming silvery below. Lower parts  
and side of head silvery. Spinous  
dorsal tinged with pale greenish  
yellow and other fins all more or  
less pale. Base of caudal dull  
orange.



Strongylura tahitiensis Fowler and Bean

Strongylura tahitiensis Fowler and Bean,  
Proc. U. S. Nat. Mus., vol. 63, p. 10, 1923  
(type locality: Tahiti); Mem. Bishop  
Mus., vol. 10, p. 73, 1928 (compiled);  
vol. 11, no. 5, p. 319, 1931 (compiled).

? Belone depressa (not Poey) Boulenger,  
Ann. Mag. Nat. Hist., ser. 6, vol. 20,  
p. 374, 1897 (Rotuma).

{ Schmeltz, Cat. Mus. Godeffroy, no. 7, p.  
57, 1879 (Yap). — Föll, Cat. Mus.  
Godeffroy, no. 9, p. 37, 1884 (Yap). —

? Tylosurus platurus (not Bennett)  
Waite, Rec. Austral. Mus., vol. 5,  
p. 3, 1903 (Paanopa, Ocean Island,  
Gilbert Group).



Depth 17, body partly cylindrical, caudal peduncle deeper than wide; head  $3\frac{1}{4}$ , width  $7\frac{1}{5}$ . Snout  $1\frac{3}{5}$  in rest of head; eye  $11\frac{1}{5}$  in head from snout tip,  $7\frac{1}{5}$  in snout,  $1\frac{1}{8}$  in interorbital; maxillary reaches  $\frac{1}{4}$  in eye, length to anterior point  $2\frac{7}{8}$  in rest of head posteriorly; canines slightly inclined posteriorly; interorbital  $9\frac{1}{2}$  in head from snout tip, level, with long wide depression.

Scales 300 in median or lateral axial series to caudal base; 206



predorsal forward to occiput; 15  
above lateral line to dorsal origin;  
19 on postocular to hind preopercle  
edge. Scales with 38 to 42 parallel  
vertical striae, more or less complete.

D. II, 14, I, first branched ray  
 $4\frac{4}{5}$  in total head length; A. II,  
17, I, first branched ray  $5\frac{1}{8}$ ;  
least depth of caudal peduncle  
 $1\frac{2}{5}$  in eye; caudal 4 in total  
head length, hind edge concave?;  
pectoral  $4\frac{1}{5}$ ; ventral  $6\frac{3}{5}$ , reaches  
 $2\frac{7}{8}$  to vent.

Back and top of head brown,  
sides and lower surfaces pale to  
whitish, evidently silvery white  
when fresh. Obscure silvery streak,  
not wider than pupil, from  
shoulder till below dorsal, where  
expanded  $\frac{2}{3}$  vertical eye diameter



No. 112, November 20, 1922, p. 83 (Hawaii).  
Pristipomoides microlepis Fowler, Mem.  
Bishop Mus., vol. 10, 1928, p. 192 (Hawaiian  
Islands).

Aprion brevirostris (Cuvier and Valenciennes)  
Güichenot, Notes Ile Réunion, vol. 2, 1862,  
p. 24 (name only). ~~Remane~~ — Sauvage,  
Hist. Nat. Madagascar, Poiss., 1891, p. 109  
(name in synonymy).

Etelis brevirostris Vaillant, Bull. Soc.  
Philomath. Paris, series 6, vol. 10, 1873, p.  
15. Bourbon. — Sauvage, Hist. Nat.  
Madagascar, Poiss., 1891, p. 109, pl. 10, fig.  
2, a - b (type).

Arnillo auricilla Jordan, Evermann, Tanaka,  
Proc. Cal. Acad. Sci., series 4, vol. 16, 1927,  
p. 668, pl. 23, fig. 3. Honolulu.



in width. Fins all brownish.

Micronesia (Yap and Paanopa) and Polynesia (Ellice and Society Islands). Near Strongylura incisa, though with some very diverse distinctions as the fewer (14) branched dorsal rays, increased lateral scales (300) in lateral series. In the character of the wide depression on the top of the head, with the somewhat convex areas on each side, it agrees largely with S. incisa.

U. S. N. M. No. 83424, Type. Tahiti. Wilkes Exploring Expedition. Length 640 mm. (beak and caudal tips damaged). In the original description head erroneously given as  $5\frac{1}{3}$ . ✓



Pristipomoides microlepis (Bleeker)

Chaetopterus microlepis Bleeker, Verslagen Kon. Akad. Wet. Amsterdam, series 2, vol. 3, 4869, p. 80. (Amboina); Bourbon Island; Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, pl. 17, fig. 2.

Ciprion (Ciprion) microlepis Bleeker, Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, p. 26 (Amboina; Bourbon); Atlas Ichth. Ind. Néerl., vol. 8, 1876-77, p. 78 (Amboina).

Ciprion microlepis Bleeker, Atlas Ichth. Ind. Néerl., vol. 8, 1876-77, pl. (58) 336, fig. 5. — Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1900, p. 502 (Hawaii). — Weber, Siboga Exped., vol. 57, Fische, p. 257 (Sulu, Sulu Archipelago; Banda). — Ogilby, Mem. Queensland Mus., vol. 5, 1916, p. 182 (Moreton Bay). — Fowler, Copeia,



Strongylura breffti (Günther)

Belone breffti Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 250, 1866 (type locality: Australia). — Macleay,

Proc. Linn. Soc. New South Wales, vol.

5, pt. 2, p. 178, 1881 (rivers of north

Queensland). — Regan, Trans. Zool.

Soc. London, vol. 20, pt. 6, p. 276, 1914

(Mimika River, New Guinea).

Saville Kent, Great Barrier Reef, pp. 299, 1893 (Fitzroy near Rockhampton).

Belone breffti Weber, Nova Guinea,

vol. 9, pt. 4, p. 553, 1913 (Lorentz River).

Tylosurus breffti McCulloch, Mem.

Austral. Mus., vol. 5, pt. 2, p. 29,

1919 (reference).



Tylosurus kreffti Weber and Beaufort,  
Fishes Indo Austral. Archip., vol.  
4, p. 123, 1922 (Lorentz River).

? Belone cancila (not Buchanan-  
Hamilton) Macleay, Proc. Linn. Soc.  
New South Wales, vol. 7, p. 592, 1882  
(New Guinea).

Xenentodon cancila Weber and  
Beaufort, Fishes Indo Austral.  
Archip., vol. 4, p. 134, 1922 (note on  
Macleay's record).



81

Depth not much less than pectoral length, body strongly compressed; free portion of tail strongly compressed, much deeper than broad; head  $2\frac{2}{5}$ . Eye equals interorbital, 3 in postorbital; base of premaxillaries much depressed; maxillaries  $\frac{2}{3}$  hidden by preorbital; teeth rather feeble, wide set and tongue smooth; superciliary region slightly striated.

Scales thin, small. Scaly groove of moderate width runs along middle of upper surface of head. ✓

31

D. 17, origin opposite anal origin, middle and hinder rays subequal, short, last ending well before caudal base; A. 19, like dorsal only front rays longer; caudal slightly emarginate; P. 13, somewhat less than distance of opercular margin from orbit; ventral midway between preopercle and caudal.



Upper parts blackish, sides  
and belly silvery white, two colors  
separated by narrow greenish streaks.  
Length 355 mm. (Günther.)

Queensland, New Guinea.



83

Strongylura groeneri (Klunzinger)

Belone groeneri Klunzinger, Sitzs. Ber. Akad. Wiss. Wien, math.-nat. Kl., vol. 80, pt. 1, p. 414, 1879 (type locality: Port Darwin).

Tylosurus groeneri McCulloch, Austral. Mus. Mem., No. 5, pt. 1, p. 100, June 29, 1929 (reference).

Depth  $1\frac{1}{4}$  in pectoral fin; head  $3\frac{1}{6}$ . Eye  $9\frac{1}{2}$  in head,  $2\frac{1}{3}$  in postorbital; tongue rough; interorbital  $\frac{1}{2}$  in postocular; head with shallow but distinct groove.

D. 19 or 20; A. 20. Length 600 mm.

(Klunzinger.)  
North Australia. <sup>Klunzinger also gives the following comparisons.</sup> Like Belone robusta Günther with weak keel to tail, broad as deep; lower dorsal and anal posterior rays, only under edge of upper jaw visible, small adherent scales, forked caudal <sup>and</sup> similarly placed ventral. Belone choram has hind



dorsal and anal rays somewhat longer, also with different ray lengths. Belone liuroides has larger scales, longer head, color as usual, dorsal and pectoral somewhat dark. Belone gaviaoides is little known though without lateral caudal keel.



85

Strongylura macleayana (Ogilby)

Belone macleayana Ogilby, Cat. Fishes New South Wales, p. 53, 1886 (on macleay); Edible Fishes of New South Wales, p. 170, pl. 41, 1893.

Tylosurus macleayana Stead, Fishes of Australia, p. 64, 1906 (New South Wales).  
— Roughley, Fishes of Australia, p. 35, 1916 (New South Wales).

Tylosurus macleayanus McCulloch, Austral. Mus. Mem., no. 5, pt. 1, p. 100, June 29, 1929 (compiled).

Belone gracilis (not Lowe 1839, Schlegel 1846)  
macleay, Proc. Linn. Soc. New South Wales, vol. 6, pt. 2, p. 243, Sep. 12, 1881 (type locality: Port Jackson).

Tylosurus impotens Ogilby, Proc. Roy. Soc. Queensland, vol. 21, p. 89, 1908 (type locality: Moreton Bay, Queensland).



86

Depth  $16\frac{3}{4}$ ; head  $3\frac{2}{5}$ . Snout  $1\frac{3}{5}$  in head from snout tip; eye  $1\frac{1}{3}$ ,  $7\frac{1}{2}$  in snout; maxillary reaches  $\frac{2}{3}$  of eye; jaws with outer band of fine teeth and inner series of moderately stout conic ones; shallow median groove from occiput to upper jaw; occiput moderately striated, striae diverging from pair of lateral centers; posterior half of occiput deeply grooved laterally.

Scales small, thin, deciduous; cheeks and front half of cephalic groove scaly.

D. 20 or 21, first branched ray  $4\frac{1}{5}$  in total head length; A. 19 to 21, first branched ray  $3\frac{1}{3}$ ; caudal  $3\frac{7}{8}$ , ~~in the~~ rounded behind; caudal peduncle deep as wide, least depth little less than eye, keel obsolete



855

horizontal venules. Gill rakers  $10 + 16$ , lanceolate,  $1 \frac{1}{4}$  in eye; gill rakers  $\frac{2}{3}$  of gill filaments.

Scales 68 to 70 in lateral line to caudal base and 5 or 6 more on latter; 10 scales above lateral line, 18 below, 23 to 26 predorsal, 8 rows on cheek. Suprascapula entire, venulose. Preorbital with oblique parallel striae. Scales with 12 or 13 basal radiating striae; circuli minute.

D. X, 10, I, third spine  $2 \frac{1}{5}$  to  $2 \frac{1}{2}$  in total head length, last ray 2 to  $2 \frac{1}{8}$ ; A. III, 8, I, third spine  $3 \frac{1}{3}$  to  $3 \frac{3}{5}$ , last ray 2 to  $2 \frac{1}{5}$ ; least depth of caudal peduncle  $3 \frac{1}{5}$  to  $3 \frac{1}{4}$ ; pectoral  $1 \frac{1}{8}$  to  $1 \frac{1}{3}$ ; ventral  $1 \frac{2}{3}$  to  $1 \frac{3}{4}$ ; caudal  $2 \frac{4}{5}$  to 3 in combined head and body.

Olive green on back, little paler



87

or absent; pectoral  $3\frac{1}{5}$ , greater than postorbital; ventral  $5\frac{1}{8}$  in total head, reaches  $2\frac{2}{5}$  to anal.

Dark green above, silvery below. Snout blackish. Dorsal and caudal yellowish green, more or less distinctly tipped with black. Elongate anal rays and ventrals pale yellow, latter more or less clouded. (Ogilby.)

New South Wales, Queensland.

Though figured with rounded caudal the description says emarginate with the lower lobe produced.

Tylosurus impotens Ogilby is evidently the same species and is said to reach 800 mm.



on lower surface. Iris brownish.  
Fins brown like body.

Mauritius, Reunion, Ceylon, East  
Indies, Japan, Polynesia, Hawaii.  
Among Indo-Pacific snappers the  
uniform dark coloration of this species  
is exceptional. I have no examples,  
except Hawaiian, with the variable  
white frontal area for which the  
nominal Aphareus fulviventris was  
proposed by Jenkins and more  
recently as the genotype of Sacrestinus.  
The species attains over 700 mm. though  
the average is usually much less.  
Alcoholic examples often show  
brilliant blue, violet or green  
reflections on the back.



88

Strongylura terebra (Whitley)

Tylosurus terebra Whitley, Records  
Austral. Mus., vol. 167, pt. 1, p. 8, pl.  
1, fig. 6, Oct. 7, 1927 (type locality:  
Michaelmas Cay, North Queensland).

Depth  $22 \frac{2}{5}$ ; head  $2 \frac{1}{2}$ . Snout  $1 \frac{2}{5}$   
in head from snout tip; eye  $12 \frac{1}{5}$ , 9  
in snout, equals interorbital, 2 in  
postorbital; maxillary concealed below  
preorbital; teeth with many subvertical  
canines, little inclined back in lower  
jaw; top of head with series of bony  
radiating ridges converging into  
vertex behind each eye and radiating



ridges over opercle. No gill rakers.

Scales cycloid. Interorbital scaly where sunken between ridges. Lateral line low, ends just behind anal fin, branch ascending to each pectoral base.  $\sqrt[3]{4}$

D. II, 19, first branched ray  $6\frac{7}{8}$  in total head; A. II, 22, first branched ray  $4\frac{7}{8}$ ; caudal peduncle depressed, keel each side, deeper than broad anteriorly, least depth  $\frac{2}{5}$  of eye; caudal emarginate, lower lobe little longer, length  $5\frac{3}{4}$  in total head; pectoral  $4\frac{1}{8}$ , rays I, 11; ventral  $7\frac{3}{4}$  in total head, reaches 3 to anal origin.

In life sea green, with intense silvery iridescence, especially below. On back 3 gray longitudinal lines,



A 1438. Kait Point, Libani Bay, Celebes.  
December 29, 1909. Length 348 mm.

A 1146. Kayoa Island. November 29,  
1909. Length 334 mm.

A 824, A 825. Talisse Island, north of  
Celebes. November 9, 1909. Length 325 to  
328 mm.

A 1334. Tomahu Island, Bouro.  
December 12, 1909. Length 330 mm.

A 1291, A 1292. Uki, Bouro. December  
9, 1909. Length 305 to 330 mm.

192410. S. N. M. Fanning Islands.  
Mr. J. H. Streets. Length 322 mm.

496410. S. N. M. Honolulu. Dr. G. P. Jenkins. Type of Aphareus

52701 U. S. N. M. Hawaiian Islands.

Bureau of Fisheries. Length 300? mm.

As Aphareus flavivultus.

55090 U. S. N. M. Honolulu. Albatross

Collection. Length 225 to 270 mm. 2 examples.

As Aphareus flavivultus.

2 examples.

(55020 U. S. N. M. Honolulu. Albatross collection.

62357 U. S. N. M. Honolulu. D. S. Jordan.

Length 272 mm. As Aphareus flavivultus.

flavivultus.



middle one thickest. Purplish  
iridescence below preorbital and  
in green on top of head when fish  
turned in light. Fins greenish.  
Caudal with indefinite dusky area  
on terminal half of upper lobe.  
Bluish line along sides, bright  
silver in certain lights. Pectoral  
axil dark green. Length 243 mm.  
(Whitley.)

Queensland.



Aphareus rutilans Cuvier

Aphareus rutilans Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 490. Red Sea. — Rüppell, Neue Wirbelth. Fische, 1835, p. 121 (Oyidda). — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 386 (compiled). — Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 25. — Klunzinger, Verh. zool. bot. Gesell. Wien, vol. 20, 1870, p. 768 (Red Sea). — Bleeker, Atlas Ichth. Ind. Néerl., vol. 7, 1873-76, pl. (21) 299, fig. 2. — Klunzinger, Fische Roth. Meer., 1884, p. 45. — Meyer, Anales Soc. Españ. Hist. Nat. Madrid, vol. 14, 1885, p. 19 (Rubi, New Guinea). — Boulenger, Proc. Zool. Soc. London, 1887, p. 657 (Muscate). — Day, Fishes of India, Suppl., 1888, p. 782 (Ceylon). — Boulenger, Proc. Zool. Soc. London, 1889, p. 245 (Muscate). — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 195, fig. 45 (type of Aphareus thompsoni).



91

Strongylura ferox (Günther)

Belone ferox Günther, Cat. Fishes  
Brit. Mus., vol. 6, p. 242, 1866 (type  
locality: New South Wales). —

Castelnau, Proc. Linn. Soc. New South Wales,  
vol. 2, p. 239, 1877 (Queensland); vol. 3,  
p. (355) 394, 1878 (Port Jackson). —

Macleay, Proc. Linn. Soc. New South Wales,  
vol. 5, pt. 2, p. 176, 1881 (Port Jackson).

— Ogilby, Edible Fish. New South Wales, p.  
168, 1893.

— Woods, Fisher. New South Wales, p. 83,  
pl. 36.

Tylosurus ferox Stead, Fishes of Australia,  
p. 64, fig. 24, 1906 (New South Wales; Western  
Australia). — Roughley, Fishes of Australia,

p. 33, pl. 6, 1916 (New South Wales, Queensland,  
Western Australia). — McCulloch, Austral. Mus.  
Mem., no. 5, pt. 1, p. 101, June 29, 1929 (North Australia,  
New South Wales, Queensland, Western Australia, Victoria).



92

Body compressed, depth less than pectoral length; head less than 3. Eye  $\frac{2}{3}$  of interorbital,  $\frac{2}{7}$  of postorbital; bases of premaxillaries depressed; only basal half of maxillaries hidden by preorbital; jaws and teeth strong, none on palate or tongue; head above with broad median groove, tapering behind and widening in front; superciliary region striated.

Scales thin, rather small, adherent. D. 21, middle and hind rays short, subequal, last ending well before caudal root; A. 26, like dorsal; caudal truncate; free portion of tail not compressed, subtriangular, with back of tail broad and depressed; pectoral longer than opercular edge from orbit; ventral nearly midway between front eye edge and caudal



Aphareus (Fares) rutilans Jordan,  
Evermann, Yanaka, Proc. Cal. Acad.

Sci., series 4, vol. 16, no. 20, November 14,  
 1927, p. 673, pl. 24, fig. 1 (Honolulu).

Aphareus fucatus (not Lacépède) Bleeker,  
Atlas Ichth. Ind. Néerl., vol. 8, 1876-77,  
 p. 80 (part). — Jordan and Thompson,  
Proc. U. S. Nat. Mus., vol. 39, January 30,  
 1911, p. 467 (part).

Aphareus thompsoni Fowler, Occas. Pap.  
Bishop Mus., vol. 8, no. 7, 1923, p. 382.  
 Honolulu.

depth  $3\frac{3}{5}$  to  $3\frac{2}{3}$ ; head  $3\frac{1}{8}$  to  $3\frac{1}{5}$ ,  
 width  $2\frac{1}{4}$  to  $2\frac{2}{5}$ . Snout  $2\frac{7}{8}$  to 3 in head  
 from snout tip; eye  $4\frac{1}{2}$  to  $1\frac{2}{5}$   
 to  $1\frac{3}{4}$  in snout,  $1\frac{2}{3}$  in interorbital;  
 maxillary reaches  $\frac{3}{5}$  to  $\frac{2}{3}$  in eye,  
 expansion  $1\frac{3}{4}$  to 2 in eye, length  $1\frac{7}{8}$   
 to 2 in head from snout tip; teeth  
 minute, sharp pointed, form narrow



base. Length 775 mm. (Günther.)<sup>93</sup>

Western Australia, North  
Australia, Queensland, New South  
Wales and Victoria.



uniform band in each jaw, though obsolete or absent in mandible posteriorly; interorbital  $3\frac{1}{8}$  to  $3\frac{2}{5}$ , broadly convex; preopercle edge entire, flange with fine parallel venules. Gill rakers  $19 + 32$ , lanceolate, inner edges finely spinose, length  $1\frac{1}{5}$  in eye; gill filaments  $\frac{3}{5}$  of gill rakers.

Scales 70 to 73 in lateral line to caudal base and 3 to 5 more on latter; 8 to 10 scales above lateral line, 17 or 18 below, 22 or 23 predorsal, <sup>8 or 9</sup> rows on cheeks.

Suprascapula entire, striate. Scales with 10 or 11 basal radiating striae; about 108 weak apical denticles, very small, with 14 or 15 transverse series of basal elements; circuli very fine.



Strongylura timucoides (Van Hasselt).

Belone timucoides Van Hasselt, Algemein.  
Kunst- en Letterbode, no. 35, 1823.

(on Wahlah Kuddera Russel, Fishes of  
Coromandel, vol. 2, p. 60, pl. 175, 1803,  
type locality: Vizagapatam); Bull. Sci.  
Nat. Geol. Ferrussac, vol. 2, p. 374, 1824  
(reference).



95

Esoc belone (not Linnaeus) Forskål,  
Descript. Animal., pp. <sup>III</sup> 67, 1775 (Red Sea).

Belone coromandelica Kuhl and Van  
Hasselt, Algem. Konst- en Letterbode,  
vol. 1, p. 1300, 1823 (type locality:  
Coromandel) (name only).

Tylosurus coromandelica Jordan and  
Starks, Proc. U. S. Nat. Mus., vol. 26,  
p. 530, 1903 (Tsuringa; Yokohama).  
— Jordan and Richardson, Mem.  
Carnegie Mus., vol. 4, p. 175, 1909  
(Takao, Formosa).

Strongylura coromandelica Fowler,  
Proc. Acad. Nat. Sci. Philadelphia,  
p. 5, 1919 (Padang).



96

Belone choram Rüppell, Neue Wirbelth.;  
Fische, p. 72, 1835 (type locality:  
Red Sea). — Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 239, 1860  
(Zanzibar; Mozambique), p. 357  
(Canderoon), 1866. — Klunzinger,

Verh. zool. bot. Gesell. Wien, vol. 21,  
p. 578, 1871 (Red Sea). — Schmeltz,

Cat. Mus. Godeffroy, no. 5, p. 35, 1874  
(Samoa). — Peters, Monatsber.  
Akad. Wiss. Berlin, 1876, p. 848  
(Amboina; Bougainville Island).

— Kossman, Zool. Anzeiger, vol. 2, p. 21, 1879  
(Red Sea).

— Day, Proc. Zool. Soc. London, 1887, p. 666  
(Muscat). — Day, Fauna British  
India, Fishes, vol. 1, p. 419, 1889.

— Sauvage, Hist. nat. Madagascar,  
Pois., p. 526, 1891 (name). —  
Tillier, Mém. Soc. Zool. France,



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Belone choram Rüppell, neue Wirbelth.;  
Fische, p. 72, 1835 (type locality:  
Red Sea). — Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 239 1865  
(Zanzibar; Mozambique), p. 357  
(Cameroon), 1866. — Klunzinger,

Verh. zool. bot. Gesell. Wien, vol. 21,  
p. 578, 1871 (Red Sea). — Schmeltz,

Cat. Mus. Godeffroy, no. 5, p. 35, 1874  
(Samoa). — Getters, Monatsber.  
Akad. Wiss. Berlin, 1876, p. 848  
(Amboina; Bougainville Island).

— Day, Fishes of India, pt. 3, p. 510,  
pl. 118, fig. 4, 1877. — Boulenger,  
Proc. Zool. Soc. London, 1887, p. 666  
(Muscat). — Day, Fauna British  
India, Fishes, vol. 1, p. 419, 1889.

— Sauvage, Hist. nat. Madagascar,  
Pois., p. 526, 1891 (name). —  
Tillier, Mém. Soc. Zool. France,



vol. 15, p. 292, 1902 (Suez Canal at Red Sea). — Duncker, Mitteil. Natur. Mus. Hamburg, vol. 21, p. 169, 1903 (1904) (Singapore). — Günther,

Journ. Mus. Godeffroy, vol. 8, pt. 16, p. 351, 1909 (Duke of York Island).

<sup>37</sup>  
Mastacembelus chorum Bleeker, Atlas Ichth. Ind. Néerl., vol. 6, pl. (10) 256, fig. 2, 1869-72.

Tylosurus chorum Seale, Occas. Pap. Bishop Mus., vol. 4, no. 1, p. 12, 1906 (Tahiti). — Gilchrist and Thompson, Ann. South African Mus., vol. 6, p. 200, 1908-11 (Natal); Ann. Durban Mus., vol. 1, pt. 4, p. 309, 1917 (compiled).



Strongylura choram Fowler, Mem.

Bishop Mus., vol. 10, p. 73, 1928  
(Tahiti); Proc. Acad. Nat. Sci.  
Philadelphia, 1923, p. 37 (Madagascar).

✓38

Belone melanotus Bleeker, Natuurk.

Tijds. Nederl. Indië, vol. 1, p. 94, 1850  
(1851) (type locality: Batavia, Java);  
vol. 3, pp. 54, 59, 1852 (Singapore);

Verh. Batavia. Genoot. (Vnoek. Vissch.),  
vol. 24, p. 14 (Batavia), p. 27 (Singapore),  
1852; Act. Soc. Sci. Ind. Néerl., vol.  
1, no. 3, p. 10, 1856 (Macassar). —

Günther, Cat. Fishes Brit. Mus., vol.  
6, p. 238, 1866 (East Indies). —

Alleyne and Macleay, Proc. Linn. Soc  
New South Wales, vol. 1, p. 348, 1876  
(Cape York). — Peters, Monatsb. Akad.  
Wiss. Berlin, p. 848, 1876 (New  
Britain). — Jouan, Mém. Soc. Sci. Nat.

Cherbourg, vol. 21, p. 334, 1877-78 (on



Jouan, op. cit., vol. 8, p. 303, 1861,  
 Kanala, New Caledonia). — Macleay,  
 Proc. Linn. Soc. New South Wales,  
 vol. 5, pt. 2, p. 175, 1881 (Cape York).

— Meyer, Anal. Soc. Espan. Hist. Nat.  
 Madrid, vol. 14, p. 38, 1885 (Cebu).

— Elera, Cat. Fauna Filip., vol. 1, p. 573,  
 1895 (Cebu). — Steindachner, Abhandl.  
 Senckenburg. Gesell., vol. 25, p. 450,  
 1900 (1901) (Ternate). — Günther,

Journ. Mus. Godeffroy, vol. 8, pt.,  
 p. 352, 1909 (copied). — Weber, Siboga  
 Exped., vol. 57, p. 123, 1913 (Makassar;  
 Fische,

Karway, west Ceram; Salibabu; Saleh  
 Bay, Sumbawa).

Mastacembelus melanotus Bleeker, Atlas  
 Ichth. Ind. Néerl., vol. 6, p. 47, 1869-72  
 (Java, Singapore, Celebes, Moluccas).



Tylosurus melanotus Fowler, Journ.  
Acad. Nat. Sci. Philadelphia, ser. 2,  
vol. 12, p. 501, 1904 (Padang). — Weber  
and Beaufort, Fishes Indo Austral.

Archip., vol. 4, p. 127, fig. 47, 1922  
(Makassar, Celebes; Moluccas;  
Salibabu; Sumbawa). — Herre,

Philippine Journ. Sci., vol. 36, no. 2, p.  
231, June 1928 (Vigan; Gingoog;  
Sitangkai).

✓39

Strongylura melanotus Fowler, Proc.  
Acad. Nat. Sci. Philadelphia, 1925,  
p. 200 (Delagoa Bay); 1927, p. 261  
(Santa Maria; Vigan).

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Tylosurus crocodilus (not Le Sueur)<sup>101</sup>  
Fowler, Journ. Acad. Nat. Sci.  
Philadelphia, ser. 2, vol. 12, p. 501,  
pl. 11, upper figure, 1904 (Padang). —  
Weber and Beaufort, Fishes Indo  
 Austral. Archipel., vol. 4, p. 120, 1923  
(compiled; part).

Strongylura crocodila Fowler, Proc.  
Acad. Nat. Sci. Philadelphia, 1915,  
p. 5 (Padang example); Mem. Bishop  
Mus., vol. 10, p. 74, 1928 (south east  
of Tahiti); vol. 11, no. 5, p. 319, 1931  
(compiled); Proc. Acad. Nat. Sci.  
Philadelphia, 1929, p. 603 (Hong  
Kong).



the dark area at caudal to  
surface white. Iris gray  
scale. Sift dusted with fine  
red and caudal brownish,  
whitish.  
19 mm. Crocodile River.  
S. A. West. Presented by  
H. Harold.

Scales  $3^{or 32}_1 + 3$  in lateral line;  $6^{or 7}_1$   
e, 4 below,  $14^{or 15}_1$  predorsal; very small  
crest and front of belly; axillary  
lateral scale  $3^{to 3\frac{1}{2}}_1$  in fin. Scales 3  
between lateral line and ventral origin.  
with 18 to 25 basal radiating striae,  
37 apically; circuli basal, fine.  
D. III, 8, I, third simple ray entire  
flexible terminally, first branched  
 $\frac{1}{2}$  in head; A. III, 5, I, first branched



Tylosurus giganteus (not Schlegel)  
Evermann and Seale, Bull. Bur.  
 Fisher., vol. 26, p. 58, 1906 (1907) (Bacon).

Belone robusta (not Günther) Regan,  
 Ann. Natal Mus., vol. 1, pt. 3, p. 243, 1908  
 (Kosi Bay).

Tylosurus robusta Gilchrist and Thompson,  
 Ann. Durban Mus., vol. 1, no. 4, p. 310,  
 1917 (compiled).



Depth  $13\frac{3}{4}$  to 15, compressed, caudal peduncle tetrahedral; head  $3\frac{1}{6}$  to  $3\frac{2}{3}$ , width  $6\frac{2}{5}$  to  $6\frac{3}{4}$ .

Snout  $1\frac{1}{2}$  to  $1\frac{4}{7}$  in head from snout tip; eye  $8\frac{7}{8}$  to 9,  $5\frac{7}{8}$  to  $7\frac{1}{5}$  in snout,  $1\frac{1}{10}$  to  $1\frac{1}{5}$  in interorbital; maxillary reaches  $\frac{1}{6}$  to  $\frac{1}{5}$  in eye, length to front angle  $2\frac{1}{3}$  to  $2\frac{7}{8}$  in rest of head posteriorly; canines slightly inclined posteriorly; interorbital  $8\frac{1}{8}$  to  $8\frac{3}{5}$  in head from snout tip, level, with broad and rather shallow median depression.

✓ 40 Scales 240 to 285 in median lateral or axial series to caudal base; 182 to 220 predorsal forward to occiput; 20 or 21 above lateral line to dorsal origin; 17 or 18 postocular to preopercle ridge. Scales with 31 to 45 parallel



Suprascapula serrated. Scales with 7 to 9 basal radiating striae; apical denticles 49 to 52, with imperfect row of basal elements; circuli fine.

D. X, 10, I, third spine  $2\frac{1}{3}$  in total head length, second ray  $3\frac{2}{3}$ ; A. IV, 8, third spine  $3\frac{2}{3}$ , first ray  $3\frac{1}{4}$ ; caudal  $1\frac{1}{5}$ , deeply forked, lobes sharply pointed; least depth of caudal peduncle  $3\frac{3}{4}$ ; pectoral  $1\frac{1}{2}$ ; ventral  $1\frac{3}{4}$ .

Uniform brownish, with slight olive cast above, below and on sides lighter or with silvery tints. Eye pale. Fins all pale brownish.

Bourbon, East Indies, <sup>Philippines,</sup> Queensland, Hawaii. Bleeker describes it as rosy above, silvery rosy below. Head above and snout violaceous rosy.



vertical striae, more or less complete across median or vertical axis.

D. II, 23 or II, 24, first branched ray  $4\frac{1}{2}$  to  $4\frac{3}{5}$  in total head length; A. II, 20 or II, 21, first branched ray  $4\frac{2}{3}$  to  $5\frac{1}{5}$ ; least depth of caudal peduncle  $1\frac{3}{5}$  to  $1\frac{3}{4}$  in eye; caudal  $2\frac{7}{8}$  to  $3\frac{1}{8}$  in total head, well forked; pectoral 4 to  $4\frac{1}{5}$ ; ventral 5 to  $5\frac{1}{2}$ , reaching  $2\frac{1}{5}$  to  $2\frac{1}{3}$  to vent.

Back and upper surfaces brown, sides and under surfaces silvery white. Iris silvery white. Fins brownish. Dorsal and caudal darker terminally and last shorter dorsal rays blackish terminally. Edges of shorter anal rays and membranes variably dusky to



Depth  $3 \frac{3}{5}$ ; head  $2 \frac{9}{10}$ , width  $2 \frac{1}{5}$ . Snout  $3 \frac{1}{3}$  in head from snout tip; eye  $3 \frac{1}{8}$ , greater than snout or interorbital; maxillary reaches opposite front pupil edge, expansion  $2 \frac{3}{4}$  in eye; length  $2 \frac{2}{5}$  in head from snout tip; bands of conic teeth in jaws, firmly erect, outer series enlarged and as 6 anterior canines in each; triangular patch of fine teeth on vomer and narrow band on each palatine; interorbital  $3 \frac{3}{4}$ , nearly level; preopercle edge denticulate, Gill rakers  $8+18$ , lanceolate, longer than gill filaments or  $\frac{1}{2}$  of eye.

Scales 62 in lateral line to caudal base and 3? more on latter; 9 scales above lateral line, 16 below, 18 predorsal forward to occiput, 6 rows on cheek.



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blackish. Paired fins brownish.

Red Sea, Arabia, Zanzibar,  
Mozambique, Portuguese East  
Africa, Natal, Madagascar,  
India, Singapore, East Indies,  
Philippines, China, Formosa,  
Japan, Queensland, Melanesia,  
Polynesia. Belone timucoides  
Van Hasselt 1823 has priority  
over the usually accepted Belone  
choram Rüppell 1835.



# Analysis of the species

a.<sup>1</sup> Aphareus. Gill rakers 5 + 16 to 18;  
scales 68 to 70 in lateral line to caudal  
base.

furcatus

a.<sup>2</sup> Fares. Gill rakers 16 to 19 + 32 to 34;  
scales 70 to 73 in lateral line to caudal  
base.

rutilans



I have accepted the original  
citation of Belone coromandelica

Van Hasselt from Weber and Beaufort,  
who state that it is a nomen nudum.

This name, however, as grouped in  
Bleeker's synonymy of hastacembelus  
melanotus would suggest that it may  
be earlier than Belone timucoides and  
even intended for the Wahlah buddera  
of Russell, in which case coromandelica  
would be the correct specific name  
for the present species.



107  
5142, 5143. Jolo, Jolo Island.  
March 5, 1908. Length 588 to  
632 mm.

5008. South Tumbidao, lagoon  
anchorage. February 26, 1908.  
Length 708 mm.



U.S.N.M. No. 56082. Bacon.

Bureau of Fisheries (3697). Length 307 mm. As Tylosurus giganteus.

A.N.S.P. No. 27461. Padang, Sumatra. A.C. Harrison and H.L. Hiller. Length 513 mm. (from front eye edge). In arracks clear dark hyaline-green above, line of demarcation along upper side very distinct and lower sides and body ventrally silvery-white. Dorsal and caudal dark brown, tinged with green. Pectoral base green, fin blackish terminally. Anal and ventral pale-grayish, whitish basally. As Tylosurus melanotus.

A.N.S.P., <sup>1 example</sup> ~~27462~~. Padang, Sumatra. A.C. Harrison and H.L. Hiller. Length 330 mm. (lower caudal lobe damaged).



toothless. Preopercle entire, with broad naked flange. Vertebrae 24, of which 13 caudal. About 70 scales in a lateral series. Snout and jaws scaleless, also dorsal and anal; head with temporal region, jaws and opercles scaly; caudal minutely scaled. Dorsal low, continuous, with 10 spines and 10 or 11 rays, last soft rays well extended. Anal with 3 spines and 8 rays, last ray well extended. Caudal deeply forked, lobes long, slender, pointed. Pectoral long, falcate, lower rays extended with age. Ventral inserted below pectoral.



In arrack deep hyaline green<sup>109</sup>  
above, line of demarcation on  
back above distinct, rest of  
sides and lower surface, also  
of head, silvery white. Dorsal  
dusky, front rays dull olivaceous  
basally. Pectoral base greenish,  
fin blackish terminally. Ventral  
and anal white basally, terminally  
grayish or dusky. As Tylosurus  
crocodilus.



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Genus Aphareus Cuvier

Aphareus Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 485. Type Aphareus caeruleus Cuvier, designated by Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, 1913, p. 165.

Naerestinus Jordan, Evermann, Tanaka, Proc. Cal. Acad. Sci., fourth series, vol. 16, no. 20, November 14, 1927, p. 670. Type Aphareus flavivultus Jenkins, monotypic.

Fares Jordan, Evermann, Tanaka, op. cit., fourth series, vol. 16, no. 20, November 14, 1927, p. 673. Type Aphareus rutilans Cuvier, orthotypic.

Body elongate, compressed. Head pointed, compressed. Eye moderate. Mouth large, lower jaw strong and with prominent chin. Maxillary rather narrow. Teeth in jaws in several rows, minute or deciduous, without canines; palate and tongue



Strongylura philippina (Herre)

Tylosurus philippinus Herre,  
Philippine Journ. Sci., vol. 36, no. 2,  
p. 228, pl. 3, June 1928 (type locality:  
Coron; Busuanga; Bato Bato,  
Tawi Tawi; Sitanksi, Borneo).

Depth  $11\frac{1}{4}$  to  $11\frac{1}{3}$ , compressed  
elongate body roughly pentagonal;  
head  $2\frac{4}{5}$  to  $2\frac{9}{10}$ . Snout  $1\frac{2}{3}$  in  
head; eye 9 to 10, 6 to  $6\frac{1}{4}$  in snout,  
 $1\frac{1}{4}$  to  $1\frac{1}{3}$  in interorbital,  $2\frac{2}{3}$  to  
 $2\frac{3}{4}$  in <sup>maxillary not entirely concealed by preorbital;</sup> postorbital; end of mandible  
extending beyond snout in thick,  
spongy, somewhat flexible tip which  
rises above so upper jaw rests  
upon it and its upper profile  
continuous with that of lower jaw  
tip when mouth closes; canines long,  
strong, pointed, vertical; head flat  
above, with wide, deep, median,



11 + 20, lanceolate, equal gill filaments or  $1\frac{4}{5}$  in eye.

Scales 62 to 66 in lateral line to caudal base and 4 or 5 more on latter; 7 or 8 scales above lateral line, 15 or 16 below, 18 to 20 predorsal, 6 or 7 rows on cheek. Suprascapula entire, with keels. Scales with 7 basal radiating striae; apical denticles 83 to 85, small, weak, with 2 to 9 transverse series of basal elements; circuli minute.

D. X, 11, I, third spine  $2\frac{3}{5}$  to 3 in total head length; last ray  $2\frac{1}{8}$  to  $2\frac{1}{3}$ ; A. III, 8, I, third spine  $3\frac{2}{5}$  to 4, last ray  $2\frac{1}{8}$  to  $2\frac{1}{5}$ ; caudal 1 to  $1\frac{1}{5}$ , deeply forked; least depth of caudal peduncle  $3\frac{2}{5}$  to  $3\frac{1}{2}$ ; pectoral 1 to  $1\frac{1}{8}$ ; ventral  $1\frac{2}{5}$  to  $1\frac{3}{5}$ .

Back light olivaceous to paler and whitish below, with silvery reflections.



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scaleless channel and small narrow elongate groove each side; space between these and outer margin of interorbital with longitudinally divergent striae; median channel narrows abruptly anteriorly and prolonged in narrow median groove to tip of beak.

Scales  $194 + 10$  in lateral line; 22 above lateral line to dorsal origin; preopercle entirely finely scaled, opercle and top of head naked. Lateral line forms low keel on caudal peduncle.

D. II, 18 to II, 20, second simple ray  $3 \frac{1}{5}$  in total head; A. I or II, 18 to 20, second simple ray  $3 \frac{1}{2}$ ; least depth of caudal peduncle  $1 \frac{1}{5}$  in eye; caudal forked, lower lobe larger and  $2 \frac{3}{5}$   $2 \frac{1}{2}$  in total head; pectoral  $3 \frac{4}{5}$ ; ventral  $3 \frac{3}{4}$ , origin midway between hind pupil edge and caudal base, reaches  $1 \frac{1}{2}$  to anal.



Brownish above, silvery below.  
Opercles and under side of head  
white. Fins colorless, except upper  
half of dorsal which more or less  
dusky and caudal medially dusky  
to blackish at outer edge. Length  
390 to 462 mm. (Here.)

Philippines, Borneo. Very close to  
Strongylura crocodilus, apparently  
only differing in the end of its jaws,  
which may be a condition of youth.



Strongylura anastomella (Valenciennes)

Belone anastomella Valenciennes, Hist.

Nat. Poiss., vol. 18, p. 446, 1846 (type locality: China). — Günther, Cat. Fish.

Brit. Mus., vol. 6, p. 249, 1866 (Shanghai, China, Japan, India); Ann. Mag. Nat.

Hist., ser. 4, vol. 13, p. 158, 1874 (Chefoo).

— Károli, Termész. Füzetek, <sup>Budapest</sup> vol. 5, p. 182, 1881 (Meyam River).

— Steindachner, and Döderlein, Denks.

Akad. Wiss. Wien, Math.-nat. Kl., vol.

49, pt. 1, p. 293, 1885 (Tokyo). — Elera,

Cat. Fauna Filip., vol. 1, p. 573, 1895

(Luzon, Cavite, Santa Cruz). — Ishikawa

and Matsuura, Prelim. Cat. Fish. Mus.



Tokyo, p. 18, 1897 (reference).

Mastacembelus anastomella Bleeker,  
Nederl. Tijds. Dierk., vol. 4, p. 149, 1873  
(compiled).

Tylosurus anastomella Jordan and  
Snyder, Annot. Zool. Japon., vol. 3,  
p. 61, 1901 (<sup>reference</sup> ~~Yokohama~~). — Jordan and  
Starks, Proc. U. S. Nat. Mus., vol. 26,  
p. 531, 1903 (Yokohama, Tokyo, Matsushima,  
Hakodate). — Regan, Ann. Mag. Nat. Hist.,  
ser. 8, vol. 7, p. 332, 1911 (name). — Jordan  
and Metz, Mem. Carnegie Mus., vol. 6,  
p. 25, 1913 (<sup>n</sup> Fusan). — Wu, Contrib. Biol.



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Lab. Sci. Soc. China, vol. 5, no. 4,  
p. 63, fig. 51, 1929 (Amoy). —  
Sowerby, Natural. in Manchuria,  
vol. 4, p. 161, 1930 (Pei tai Ho; and  
Chin Wang Tao; Dalny; Lantung). —  
Chu, Biol. Bull. St. John's Univ.,  
Shanghai, no. 1, p. 86, Jan. 1931 (compiled).  
— Anonymous, Illustr. Jap. Aquat.  
Plant. Animals, vol. 1, pl. 21, fig. 8  
1931.

Strongylura anastomella Fowler, Proc.  
Acad. Nat. Sci. Philadelphia, p. 5, 1919  
(Hakodate, Japan). (Error.)



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Strongylura anastomella Fowler,  
Hong Kong Naturalist, vol. 3, nos. 3-  
4, p. 262, fig. 8, Dec. 1932 (compiled).



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Heniochus singularis Smith and Radcliffe.

Heniochus singularis Smith and Radcliffe,  
Proc. U. S. Nat. Mus., vol. 40, 1911, p. 321, fig. 2.  
Ulithi Island, Luzon, Philippines,  
Formosa, East Borneo, Celebes, Gillolo Island.



Belonia ciconia Richardson, Ichth.  
China Japan, p. 246, 1846 (type locality:  
Chinese Seas; Canton).

Belone esocina Basilevsky, nov.

Mém. Soc. Nat. Moscou, vol. 10, p. 260,

1855 (type locality: mari prov. Shantung).

Mastacembelus esocina Bleeker, Nederl. Tijds.  
Dierk., vol. 4, p. 149, 1873 (compiled).

Tylosurus esocina Chu, Biol. Bull. St. John's  
Univ., Shanghai, no. 1, p. 86, Jan. 1931 (compiled).

Belone japonica (Döderlein) Steindachner

and Döderlein, Denks. Akad. Wiss. Wien,

math.-nat. Kl., vol. 49, pt. 1, p. 293, 1885

(name in synonymy).



Depth  $17\frac{1}{4}$  to  $22\frac{4}{5}$ , compressed; head  $2\frac{9}{10}$  to  $3\frac{1}{8}$ , width  $7\frac{4}{5}$  to  $12\frac{1}{3}$ . Snout  $1\frac{1}{3}$  to  $1\frac{1}{2}$  in head; eye  $12\frac{1}{4}$  to  $15\frac{1}{5}$ , 8 to  $11\frac{1}{5}$  in snout, 1 to  $1\frac{3}{5}$  in interorbital; maxillary reaches  $\frac{1}{4}$  to  $\frac{2}{7}$  in eye, length to maxillary point  $2\frac{1}{8}$  to  $3\frac{2}{5}$  in rest of head posteriorly; canines but slightly inclined backward; interorbital 10 to  $14\frac{4}{5}$ , level, with broad depression.

Scales 178 to 190 in median lateral or axial series to caudal base; 122 to 125 predorsal forward to occiput; 12 above lateral line to dorsal origin; 14 postocular to vertical preopercle ridge. Scales with 23 to 26 vertical striae each side of median vertical line, more or less complete.



Aprion pristipoma Bleeker, Atlas Ichth. Ind. Néerl., vol. 8, 1876-77, pl. (58) 336, fig. 3. — Meyer, Anales Soc. Españ. Hist. Nat. Madrid, vol. 14, 1885, p. 8 (Kordo, Mysore).

Centropristis (Aprion) pristipoma Klunzinger, Fische Roth. Meer., 1884, p. 16.

Mesoprion dentex Bleeker, Act. Soc. Sci. Ind. Néerl. (Enumerat.), vol. 6, 1859, p.

20. Sumatra; Amboina = Pristipomoides typus Bleeker, Lutjanus dentex Bleeker, Nederl. Tijds. Dierk., vol. 2, 1865, p. 278 (Amboina).

Serranus zonatus (not Valenciennes) Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 103 (part).

Anthias zonatus Günther, op. cit., vol. 1, 1859, p. 503 (part).

Mesoprion multident Day, Proc. Zool. Soc. London, 1870, p. 680. Andaman Islands.



D. II, 17, first branched ray  $6\frac{1}{4}$  to  $9\frac{4}{5}$  in head from snout tip; A. II, 21 to II, 24, first branched ray  $4\frac{1}{5}$  to  $5\frac{1}{4}$ ; least depth of caudal peduncle  $1\frac{1}{4}$  to  $1\frac{3}{5}$  in eye; caudal  $3\frac{7}{8}$  to  $4\frac{1}{10}$  in head to snout tip, slightly emarginate behind; pectoral  $4\frac{1}{8}$  to 5; ventral  $7\frac{1}{2}$  to  $7\frac{7}{8}$ .

Back and upper surfaces brown, sides and below silvery white. Iris whitish. Fins brownish, lower ones paler to whitish, end of dorsal lobe and caudal points dusky. Pectoral blackish terminally.

China, Japan, Korea. Though ~~reported~~ recorded from India by Günther and the Philippines by Elera, these records likely erroneous.



Depth  $2\frac{7}{8}$  to  $3\frac{1}{8}$ ; head  $2\frac{3}{5}$  to 3, width 2 to  $2\frac{1}{5}$ . Snout  $2\frac{3}{4}$  to  $3\frac{2}{5}$  in head from snout tip; eye  $3\frac{1}{4}$  to  $3\frac{7}{8}$ , 1 to  $1\frac{2}{5}$  in snout, greater than interorbital in young to subequal with age; maxillary reaches  $\frac{1}{3}$  in eye in young to front eye edge with age, expansion  $1\frac{3}{4}$  to  $2\frac{1}{5}$  in eye, length  $2\frac{1}{4}$  to  $2\frac{1}{3}$  in head from snout tip; teeth in jaws biserial, inner row irregular and minute, outer row larger and upper front pair as two slight canines; narrow bands of fine teeth on vomer and palatines; tongue apparently edentulous; interorbital  $3\frac{4}{5}$  to  $4\frac{2}{5}$ , slightly elevated, level medially; preorbital width  $1\frac{1}{2}$  in eye; preopercle minutely and obscurely denticulated. Gill rakers 5+13, lanceolate,  $\frac{1}{4}$  greater than gill filaments or  $1\frac{3}{5}$  in eye.



U. S. N. M. <sup>no.</sup> 50740. Tokyo, Japan.

W. S. Jordan and J. A. Snyder. Length  
195 to 394 mm. Five examples.

U. S. N. M. no. 57603. Japan.

P. L. Jouy. Length 434 mm.

U. S. N. P., nos. 31698 to 31699.

Hakodate. Stanford University.



pl. 30 (Byron Bay, New South Wales);  
 Australian Zoologist, vol. 1, pt. 7, 1919,  
 p. 56, pl. 23, fig. 203a (New South Wales).  
Bowersia violescens Jordan and Evermann,  
 Bull. U. S. Fish Comm., vol. 22, 1902 (1903),  
 p. 183 (Honolulu); vol. 23, pt. 1, 1903 (1905), p. 236,  
 fig. 97 (Honolulu). — Jordan and Snyder,  
 Bull. U. S. Fisher., vol. 26, 1906 (1907), p. 213  
 (Honolulu).

Aprion microlepis (not Bleeker) Ogilby, Mem.  
 Queensland Mus., vol. 5, 1916, p. 182 (Moreton  
 Bay).

Aprion pristipoma (not Bleeker) (de Vis)  
Ogilby, op. cit., vol. 5, 1916, p. 182 (Moreton  
 Bay example).

Pristipomoides sieboldii (not Bleeker) Fowler,  
 Mem. Bishop Mus., vol. 10, 1928, p. 193 (Honolulu;  
 type of Bowersia violescens).



Strongylura crocodila (Le Sueur)

Belona crocodila (Peron and Le Sueur)

Le Sueur, Journ. Acad. Nat. Sci.

Philadelphia, vol. 2, pt. 1, 1821, p. 129.

(type locality: Mauritius).

Belone crocodilus Valenciennes, Hist. Nat.

Poiss., vol. 18, p. 440, pl. 549, 1846

(Mauritius; Java; Red Sea). — Thiollière,

Faun. Woodlark, p. 204, 1857 (Woodlark

Island). — Guichenot, Notes Ile Réunion,

vol. 2, p. 29, 1862. — Schmeltz, Cat. Mus.

Godeffroy, No. 3, p. 74, 1866 (Samoa); No.

4, p. 24, 1869 (Samoa).



Mastacembelus crocodilus Bleeker,  
Nederl. Tijds. Dierk., vol. 3, p. 226,  
1850 (part).

✓  
46  
Tylosurus crocodilus Weber and Beaufort,  
Fishes Indo Austral. Arch., vol. 4, p.  
120 (compiled; part). — Herre, Philippine  
Journ. Sci., vol. 36, no. 2, p. 229, <sup>pl. 4, fig. 2,</sup> June  
1928 (Iloilo, Manila Bay, Sitangkai,  
Zamboanga).

Strongylura crocodila Fowler, Mem.  
Bishop Mus., vol. 10, p. 74, 1928 (part);  
vol. 11, no. 5, p. 319, 1931 (compiled).  
Mastacembelus melanotus (not Bleeker<sup>1850</sup>)  
Bleeker, Atlas Ichth. Ind. Néerl., vol. 6, p. 47  
(not figure), 1866-72 (part).



Depth  $11\frac{2}{3}$  to  $14\frac{1}{6}$ , body well compressed, deep; head  $2\frac{9}{10}$ , width  $5\frac{1}{3}$  to  $5\frac{2}{3}$ . Snout  $1\frac{3}{5}$  to  $1\frac{2}{3}$  in head from snout tip; eye  $10\frac{1}{4}$  to  $11\frac{1}{2}$ ,  $6\frac{2}{5}$  to  $6\frac{2}{3}$  in snout,  $1\frac{1}{2}$  to  $1\frac{3}{4}$  in interorbital; maxillary reaches  $\frac{1}{4}$  to  $\frac{1}{3}$  in eye, length to anterior point  $2\frac{1}{2}$  to  $2\frac{7}{8}$  in rest of head posteriorly; lower jaw protrudes  $\frac{2}{3}$  eye diameter beyond upper; teeth nearly vertically erect; interorbital  $6\frac{1}{3}$  to  $6\frac{1}{2}$ , level, with very deep median depression.

Scales 195 to 202 in lateral axial series to caudal base; 138 to 142 predorsal forward to occiput; 19 or 20 above lateral line to dorsal origin; 16 or 17 postocular to hind preopercle ridge. Scales with 24 to 32 parallel vertical



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Pristipomoides argyrogrammicus (Valenciennes)

Serranus argyrogrammicus Valenciennes,  
Hist. Nat. Poiss., vol. 8, 1831, p. 183.

Mauritius.

Etelis argyrogrammicus Sauvage, Hist. Nat.  
Madagascar, Poiss., 1891, p. 107, pl. 10, figs. 3,  
a + b (type).

Diacope sparus Schlegel, Fauna Japonica,  
Poiss., dec. 1, 1842, p. 14, Japan.

Mesoprion sparus Günther, Cat. Fishes  
Brit. Mus., vol. 1, 1859, p. 188 (copied).

Lutjanus sparus Bleeker, Nederl. Tijds.  
Dierk., vol. 4, 1872, p. (117) 150 (China).

Platyinius sparus Jordan and Evermann,  
Proc. U. S. Nat. Mus., vol. 25, 1903, p. 344,  
fig. 16 (Formosa).

Pristipomoides sparus Jordan and Thompson,  
Proc. U. S. Nat. Mus., vol. 39, 1911, p. 460, fig.  
57 (copied).



striae, mostly continuous over vertical axis of scale.

D. II, 19 or II, 20, first branched ray forming long lobe, 3 to  $3\frac{1}{4}$  in total head length or  $1\frac{2}{3}$  to  $1\frac{4}{5}$  in fin base; A. II, 18 or II, 19, first branched ray  $2\frac{3}{4}$  to 3 in total head or  $1\frac{1}{3}$  to  $1\frac{2}{5}$  in fin base; least depth of caudal peduncle 1 to  $1\frac{1}{5}$  in eye; caudal  $2\frac{2}{5}$  to 3 in total head; pectoral  $3\frac{1}{3}$  to  $3\frac{1}{2}$ ; ventral  $3\frac{3}{5}$  to 4, nearly reaches vent.

Back and upper surface of head brown, sides and lower surfaces silvery white. Iris white. Fins all more or less brownish, lower ones paler. East Indies,

Red Sea, Mauritius, Philippines, Melanesia, Polynesia. The two examples listed below are interesting.



mm. These and 68231 show a slightly larger eye, which about equals snout. Gill rakers  $5 + 15$ , of which 4 or 5 rudiments above and below. Hawaiian examples have gill rakers 6 or 7 + 16 or 17.



in establishing identification with the figure of Valenciennes. The robust head and erect teeth are in agreement as well as the position of the fins, except the ventral. The right only is shown and what appears to me too greatly advanced, for it would seem to reach half way to the vent. My specimens also show much longer dorsal and anal fin lobes anteriorly. Their pectorals also are not tipped with dusky. It follows that the synonymy as given by Weber and Beaufort is therefore largely irrelevant and should fall with their Tylosurus melanotus.

~~Stokes 178 & 190 in me.~~



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Scales 47 to 60 in lateral line to caudal base and 4 or 5 more on latter; 7 scales above lateral line, 14 to 16 below, 14 to 16 predorsal, 7 rows on cheek. Suprascapula denticulate. Scales with 9 to 12 basal radiating striae; apical denticles 72 to 90, minute, with 3 to 6 transverse series of basal elements; circuli very fine.

D. X, 11, fourth spine  $2\frac{1}{4}$  to 3 in total head length, first ray  $3\frac{1}{5}$  to  $3\frac{2}{5}$ , last ray 2 to  $2\frac{7}{8}$ ; A. III, 8, third spine  $3\frac{4}{5}$  to  $4\frac{1}{3}$ , first ray  $3\frac{1}{2}$  to  $3\frac{3}{4}$ , last ray 2 to  $3\frac{1}{2}$ ; caudal 1 to  $1\frac{1}{4}$ , deeply forked, slender lobes pointed and upper longer; least depth of caudal peduncle  $3\frac{1}{4}$  to  $3\frac{4}{5}$ ; pectoral  $1\frac{1}{8}$  to  $1\frac{1}{5}$ ; ventral  $1\frac{1}{3}$  to  $1\frac{3}{5}$ .

Generally light brown, lower surface little paler. Body everywhere with more



4619. Port Binanga, Subig Bay.  
January 8, 1908. Length 621 mm.

5120. Sandakan market, Borneo.  
March 4, 1908. Length 577 mm.

*Enicospira* (Whitlock)  
*Enicospira* (Whitlock, *Enicospira*)  
Form, etc., 1, 1842, p. 14, Japan.  
*Enicospira* (Whitlock, *Enicospira*)  
13 m. form., etc., 1, 1859, p. 18 (copied).



Pristipomoides typus Bleeker, Nat.  
Tijds. Nederl. Indië, vol. 3, 1852, p.  
(574) 575. Siboga, Western Sumatra. —  
Günther, Cat. Fishes Brit. Mus., vol. 1,  
1859, p. 380 (compiled). — Duncker, <sup>mitteil.</sup>  
Naturh. Mus. Hamburg, vol. 21, 1903  
(1904), p. 150 (Singapore). — Fowler,  
Mem. Bishop Mus., vol. 10, 1928, p. 192  
(on Bleeker)

Aprion typus Fowler, Journ. Acad. Nat.  
Sci. Philadelphia, series 2, vol. 12, 1904,  
p. 527 (Padang).

Dentex pristipoma Bleeker, Nat. Tijds.  
Nederl. Indië, vol. 7, 1854, p. 246. Celebes.  
Chaetopterus pristipoma Bleeker, Rech.  
Faune Madagascar, Pollen et Van Dam,  
pt. 4, 1874, pl. 10.

Aprion (Aprion) pristipoma Bleeker, Atlas  
Ichth. Ind. Néerl., vol. 8, 1876-77, p. 79  
(Sumatra, Celebes, New Guinea).



Strongylura punctulata (Günther)<sup>127</sup>

Belone punctulata Günther, Proc.  
Zool. Soc. London, 1871, p. 670 (type  
locality: Manado, Celebes).

Tylosurus punctulatus Weber and  
Beaufort, Fishes Indo Austral.

Archip., vol. 4, p. 129, fig. 48, 1922  
(Balikpapan, Borneo).

Depth nearly 12, body moderately  
compressed, caudal peduncle only  
little higher than broad; head  $2\frac{4}{5}$ . Eye nearly  $7\frac{1}{3}$  in snout,  $1\frac{1}{2}$  in  
interorbital,  $2\frac{3}{5}$  to  $2\frac{4}{5}$  in postorbital;  
maxillary entirely hidden by preorbital;  
mandible strong, height below pupil  
about equals vertical eye diameter;  
canines moderate, subulate, straight.



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tongue smooth; head above with deep broad median groove, tapering anteriorly and prolonged into narrow median groove on beak; superciliary region with numerous fine striae.

Scales 225 in lateral series; 18 above lateral line to dorsal origin. Lateral line forms distinct keel on caudal peduncle which not black.

D. II, 19, median and hinder rays shorter than prolonged anterior rays, origin above second anal ray; A. II, 18 to II, 19, rays like dorsal only first much longer; caudal forked, lobes pointed; P. I, 13, somewhat longer than postorbital; V. I, 5, long as pectoral, base midway between eye center and caudal base.

Back dark, with green reflection. Belly white or light blue gray. Sides with orange spots. Fins dusky. Length 575 mm. (Weber and Beaufort.)  
East Indies.



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Strongylura gaviaboides (Castelnau)

Belone gaviaboides Castelnau, Proc. Zool.  
Acclimat. Soc. Victoria, vol. 2, p. 142,  
1873 (type locality: Fremantle, Western  
Australia). — Macleay, Proc. Linn. Soc.  
New South Wales, vol. 5, pt. 2, p. 179,  
1881 (Western Australia).

Tylosurus gaviaboides McCulloch,  
Austral. Mus. Mem., no. 5, pt. 1, p. 99,  
June 29, 1929 (Western Australia;  
Queensland).

Body rather compressed, depth less  
than pectoral length; head  $3\frac{1}{2}$ . Snout  
much longer than rest of head, with  
long groove above; eye 2 in interorbital;  
teeth very fine, numerous, with line of  
larger conical ones each side of both  
jaws, well spaced, smaller and closer



toward nictus; palate and tongue smooth; head flat above, with 2 large radiated impressions.

Scales small. Upper surface of head smooth, with elongated space before eyes with small scales. No lateral edges to tail.

D. 22, front rays form lobe, middle and hind rays short; A. 23; caudal strongly emarginated, lower lobe longer; P. 12.

Dark brown in spirit, silvery below. Snout black. Fins yellow. Length 1025 mm. (Castelnau.)

Western Australia, Queensland.



D. X, 11, I, spines flexible, fourth  $2\frac{3}{5}$  in total head length, first ray 4, last ray 2; A. III, 8, I, spines flexible, third spine  $3\frac{2}{3}$  to  $4\frac{1}{2}$ , first ray  $3\frac{7}{8}$  to  $4\frac{4}{5}$ , last ray 2; caudal 1, deeply forked, with long, slender, pointed lobes; least depth of caudal peduncle  $4\frac{1}{8}$  to  $4\frac{1}{5}$ ; pectoral  $1\frac{1}{10}$  to  $1\frac{1}{5}$ ; ventral  $1\frac{1}{2}$  to  $1\frac{2}{3}$ .

Back light brown, becomes pale to whitish below. Body with silvery and lilac reflections. Iris light yellowish white. Fins all uniform pale brown.

Red Sea, Arabia, Reunion, Ceylon, New Guinea, Hawaii. Known chiefly by its increased gill rakers. In my figure of the type of Lipharus thompsoni the infraorbital is shown



Strongylura auiceps Fowler and Bean

Strongylura auiceps Fowler and Bean,  
Proc. U. S. Nat. Mus., vol. 63, p. 12, 1923

(type locality: Fiji or Samoa). —

Fowler, Mem. Bishop Mus., vol. 10,  
p. 74, 1928 (copied).

Depth 20, body moderately compressed,  
short caudal peduncle compressed;  
head  $3\frac{1}{6}$ , width  $7\frac{3}{5}$ . Snout  $1\frac{2}{5}$  in  
head from snout tip; eye  $11\frac{1}{4}$ ,  $8\frac{1}{5}$   
in snout,  $1\frac{1}{4}$  in interorbital; maxillary  
reaches  $\frac{1}{4}$  in eye, length to anterior  
point  $1\frac{7}{8}$  in rest of head posteriorly;



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canines slightly inclined posteriorly; interorbital  $8\frac{7}{8}$ , level, with very shallow narrow median depression.

Scales 300 in lateral axial series to caudal base; 218 predorsal forward to occiput; 20 above lateral line to dorsal origin; 22 postocular to preopercle edge. Scales with 32 to 44 parallel vertical striae each side, usually complete over median axis.

D. II, 22, I, first branched ray (tips broken)  $6\frac{1}{4}$  in total head; A. II, 20, I,



first branched ray  $5\frac{4}{5}$ ; least depth of caudal peduncle  $1\frac{3}{5}$  in eye; caudal (damaged)  $4\frac{2}{5}$ ? in total head length; pectoral  $4\frac{1}{2}$ ; ventral  $5\frac{7}{8}$ , reaches  $2\frac{1}{2}$  to vent.

Back olive brown, sides and lower surfaces evidently paler to whitish. Fins all brownish, apparently without black.

Polynesia. Apparently a valid species, known by its very long, slender beak, deep and wide occipital depression, in combination with its other characters.

U.S.N.M. no. 83422, type. Fiji. Wilkes Exploring Expedition. Length 485 mm. (caudal damaged).



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Pristipomoides microdon (Steindachner)

Aprion microdon Steindachner, Sitzb. Ber.  
Akad. Wiss. Wien, vol. 74, 1876, p. 206.  
Hawaiian Islands.

Apsilus microdon Jenkins, Bull. U. S.  
Fish Comm., vol. 22, 1902 (1903), p. 451  
(Honolulu). — Jordan and Evermann, Bull.  
U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p.  
234 (Honolulu, Hilo, Kailua).

Platyurus microdon Snyder, Bull. U. S.  
Fish Comm., vol. 22, 1902 (1904), p. 527  
(Honolulu). — Jordan and Snyder, Bull.  
U. S. Fish Comm., vol. 26, 1906 (1907), p. 213  
(Honolulu).

Aphareus roseus Castelnau, Proc. Linn. Soc.  
New South Wales, vol. 3, 1879, p. 373. Port  
Jackson.

Aprion roseus McCulloch, Records Australian  
Mus., vol. 11, no. 7, February 20, 1917, p. 173,



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Strongylura indica (Le Sueur)  
Belona indica Le Sueur, Journ. Acad.  
Nat. Sci. Philadelphia, vol. 2, pt. 1, p.  
130, 1820 (type locality: Indian Ocean).

Strongylura indica Fowler, Copeia, no. 122,  
p. 82, nov. 20, 1922 (Hawaii); Bull. Bishop  
Mus. 22, p. 6 (Guam), p. 23 (Honolulu),  
1925; Mem. Bishop Mus., vol. 10, p. 73,  
1928 (Honolulu, Tubuai, Guam); vol.  
11, no. 5, p. 319, 1931 (Honolulu); Proc.  
U. S. Nat. Mus., vol. 30, art. 6, p. 5, 1932  
(Taipi Bay, Nukuhiva, Marquesas);  
Hong Kong Naturalist, vol. 3, nos. 3-4, p. 263, <sup>fig. 9,</sup>  
Dec. 1932 (Hong Kong).



5' Belone gigantea Schlegel, Fauna  
japonica, Poiss., pts. 10 to 14, p. 245,  
1846 (type locality: seas of Japan).

— Bleeker, Verh. Batav. Genoot. (Nat. Ich.  
Japan), vol. 25, p. 18, 1853 (reference);

→ Naturk. Tijds. Nederl. Indië, vol. 13,

↑ — Brevoort, Narr. Exped. Japan, Perry, p. 280, pl.  
7, fig. 2, 1856 (Lew Chew). — Bleeker,

Nederl., vol. 3, no. 3, p. 21, 1857-58

(Japan); Naturk. Tijds. Nederl. Indië,  
vol. 15, p. 243, 1858 (Singapore); vol.

18, p. 356 (Bawean); Act. Soc. Sci.

Ind. Nederl. (Acht. Sumatra), vol. 8,

p. 55, 1859 (Bengkulan; Siboga);



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japonica, Poiss., pts. 10 to 14, p. 245,  
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(Japan); Naturk. Tijds. Nederl. Indië,  
vol. 15, p. 243, 1858 (Singapore); vol.  
18, p. 356 (Bawean); Act. Soc. Sci.  
Ind. Nederl. (Acht. Sumatra), vol. 8,  
p. 55, 1859 (Bengkulan; Siboga);



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p. 368, 1864 (Aru Islands).



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1903 (Nagasaki; Wakanoura). —  
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 Estancia, Culion, Dumaguete, Panacan,  
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Fiji), p. 50 (Somerset). ~~1880~~. —

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Islands; Cape York). — Day, Fauna

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Fauna Filip., vol. 1, p. 573, 1895 (Luzon;  
Batangas; Masugbu). — Ishikawa and

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Versl. Akad. Wet. Amsterdam, ser. 2,  
vol. 2, p. 293, 1868 (Rio, Bintang);  
Atlas Ichth. Ind. Néerl., vol. 6, p. 48,  
pl. ( ) 258, fig. 3 (Java, Madura, Bawean,  
Cocos, Sumatra, Singapore, Pinang,  
Banka, Celebes, Batjan, Pinang,



Batjan, Ternate, Amboina) 1869-72;  
 Nederl. Tijds. Dierk., vol. 4, p. 149,  
 1873 (Hong Kong).

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 Nederl. Tijds. Dierk., vol. 4, p. 154,  
 1873 (Hong Kong; error).

Tylosurus annulatus Seale, Philippine  
 Journ. Sci., vol. 5, no. 4, p. 267, Oct. 1910  
 (Borneo; error).

Tylosurus annulatus Weber and Beaufort,  
 Fishes Indo Austral. Archip., vol. 4, p. 126,  
 1922 (Kias; Pulu Weh; Batavia and  
 Semarang, Java; Lombok; Makassar,



Mastacembelus annulatus Bleeker,  
Nederl. Tijds. Dierk., vol. 4, p. 154, 1873  
(Hong Kong).



Celebes; Ambon; Banda; Kawa,  
Ceram; Wilhelmshand, New Guinea).

Belone timucoides (not <sup>Van Hasselt</sup> müller)

Journ. Indian Archip., vol. 3, pp.

67, 68, 1849.

→

↑ Belone melanurus Bleeker; Verh.  
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22, p. 11 (type locality: Madura  
Strait near Kammal; Surabaya),  
p. 5 (Kammal). — Kner, Reise  
Novara, Fische, p. 321, 1865.

3, p. 235 (Amboina; Moluccas), 249, 546,

549 (Amboina), 1852; vol. 4, p. 597

(Halmaheira), 1853; vol. 5, p. 69 (Solor),



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Celebes; Ambon; Banda; Kawa,  
Ceram; Wilhelmshand, New Guinea).

Belone timucoides (not <sup>Van Hasselt</sup> Müller)

Journ. Indian Archip., vol. 3, pp.

67, 68, 1849.

→ Belone cylindrica Bleeker, Verh. Batavia.  
Genoot. (Snoek. Visch.), vol. 24, p. 13,  
1852 (type locality: Batavia; Surabaya;  
Kamall; Siboga); Naturk. Tijds. Nederl.  
Indië, vol. 2, p. 472, 1851 (Rio); vol.  
3, p. 235 (Amboina; Moluccas), 249, 546,  
549 (Amboina), 1852; vol. 4, p. 597  
(Halmaheira), 1853; vol. 5, p. 69 (Solor),



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p. 154 (Macassar), 1853; vol. 6, p. 458  
(Amboina), 1854; vol. 7, p. 228  
(Macassar; Manado), p. 314 (Bantern),  
1854; vol. 8, p. 437<sup>1855</sup><sub>1</sub> (Bonthaian, Celebes);  
vol. 9, p. 492, 1855 (Batjan); vol. 10,  
p. 362, 1856 (Ternate); vol. 12, p. 193  
(Ternate), p. 294 (Boleling, Bali), 1856;  
Act. Soc. Sci. Ind. Néerl., vol. 1, no. 3,  
p. 5 (Manado), p. 10 (Macassar), 1856;  
vol. 1, no. 5, p. 7, 1856 (Amboina); vol.  
2, no. 7, p. 7, 1857 (Amboina). — Kner,  
Reise Novara, Fische, p. 321, 1865 (Hong  
Kong; Madras).



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Belone choram (not Forskål) (Günther,  
Fishes of Zanzibar, p. 117, 1865.

Mastacembelus choram Bleeker,  
Nederl. Tijds. Dierk., vol. 3, p. 277,

1866.

→ Strongylura fijiense, Fowler and Bean,  
Proc. U. S. Nat. Mus., vol. 63, p. 13,  
1923 (type locality: Fiji); Mem.  
Bishop Mus., vol. 10, p. 74, 1928  
(copied).

{ ? Belone koseirensis Klunzinger, Verh.  
zool. bot. Ges. Wien, vol. 21, p. 579,  
1871 (type locality: Koseir, Red Sea).



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Depth  $14\frac{1}{2}$  to  $14\frac{7}{8}$ , but slightly compressed or mostly subcylindrical; head  $3\frac{1}{10}$  to  $3\frac{1}{4}$ , width  $4\frac{7}{8}$  to  $6\frac{1}{8}$ . Snout  $1\frac{3}{5}$  in head from snout tip; eye  $8\frac{1}{3}$  to  $11\frac{1}{4}$ ,  $5\frac{2}{3}$  to  $7\frac{1}{5}$  in snout,  $1\frac{1}{3}$  to  $1\frac{2}{3}$  in interorbital; maxillary reaches  $\frac{1}{8}$  to  $\frac{1}{4}$  in eye, length to anterior point  $2\frac{7}{8}$  to  $3\frac{1}{6}$  in rest of head posteriorly; canines nearly vertically erect or slightly curved forward; interorbital  $5\frac{7}{8}$  to 7, level, with broad shallow median depression.

Scales 320? to 355 in lateral axial series to caudal base; 170 to 265 predorsal; 21 to 23 above lateral line to dorsal origin; 24 to 26 postocular to vertical preopercle ridge. Lateral line with keel along caudal peduncle side



Tropidinius

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~~Dipsilus~~ zonatus (Valenciennes)

Serranus zonatus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 509. Mauritius. —

Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 503 (compiled).

Anthias zonatus Günther, op. cit., vol. 1, 1859, p. 503 (compiled).

Etelis zonatus Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 109, pl. 11, fig. 3 (type; Madagascar).

Dipsilus zonatus Fowler, Copeia, no. 142, May 20, 1925, p. 20 (note on Hawaiian example); Bull. Bishop Mus., no. 22, 1925, p. 26 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 192 (Honolulu, types of Serranus brighami and Rooseveltia aloha).



and on caudal fin base. Scales with 26 to 31 striae each side of vertical median axis, more or less continuous.

D. II, 20, I or II, 21, I, first branched ray  $4\frac{1}{8}$  to  $4\frac{1}{5}$  in head from snout tip; A. II, 16, I to II, 22, I, first branched ray  $3\frac{3}{5}$  to  $4\frac{1}{2}$ ; least depth of caudal peduncle  $1\frac{1}{4}$  to  $1\frac{2}{5}$  in eye; caudal  $2\frac{2}{3}$  to  $2\frac{4}{5}$  in head from snout tip, forked; pectoral  $3\frac{1}{3}$  to  $3\frac{2}{3}$ ; ventral 4 to  $4\frac{1}{8}$ , reach  $2\frac{2}{3}$  to vent.

Back brown, also head above, lower surfaces silvery white. Iris white. Fins more or less brownish. Dorsal, caudal and pectoral dusky terminally, also caudal medially. Posterior part of dorsal dusky. Lower fins pale to whitish.



Genus Tropidinius Poey

Tropidinius (Gill) Poey, Repert. Fisico  
Nat. Cuba, vol. 2, 1868, p. 296. Type  
Mesopomus arnillo Poey = Upsilon dentatus  
Guichenot, monotypic.

Roosevelti (Jordan and Evermann) Jordan  
and Seale, Bull. Bur. Fisher., vol. 25, 1905  
(1906), p. 265. Type Serranus brighami Seale  
= Serranus gnatus Valenciennes, monotypic.

Body compressed; rather deep. Head  
large. Mouth moderate. Maxillary  
long, reaches beyond front of pupil.  
Canines small. No teeth on tongue.  
Preopercle edge minutely denticulate.  
Gill rakers 5 to 7 + 12 to 12. Caudal  
lobes subequal, not ending in filaments.  
Pectoral longer than ventral, reaches  
anal.



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India, Pinang, Singapore, East  
Indies, Philippines, China, Formosa,  
Riu Kiu, Japan, North Australia,  
Queensland, Micronesia, Polynesia,  
Hawaii. Known chiefly by the long  
black posterior dorsal rays, these  
usually forming a broad rounded  
lobe high as anterior pointed lobe  
of fin. It greatly suggests  
Athlennes hians, as the two species  
are shown on Bleeker's plate and  
only distinguished by the thinner  
body of the former.

The type of Strongylura fijiense  
is undoubtedly the present species.  
Its very fine scales, counted along  
the sides of the back as 450, are  
much smaller and more numerous  
or with finely crowded appearance,  
than those below the median lateral



long, slender, pointed lobes.  
Brown, paler below. Dorsals  
with several ill defined longitudinal  
darker streaks. Length 750 mm.  
(Valenciennes.)

(Red Sea, Delagoa Bay, Reunion, Ceylon.  
Also in the Eastern Atlantic.)



or axial line where they would number about 270. The discrepancies in the counts are due to the method of counting, this greatly enhanced by their irregularities. Thus in a given space as 10 mm the scales may vary 13 to 18, or even more.

Belone boseirensis Klunzinger is imperfectly described and may be the present species:

Depth 18; head  $3\frac{3}{4}$ . Snout  $4\frac{1}{2}$  in body; eye  $7\frac{1}{4}$  in head, somewhat large, greater than 1; postorbital  $1\frac{3}{4}$  in head; tongue smooth; lower jaw projects; supraorbital with 3 ridges.

D. 20 (22?), last ray not long as body depth, reaches caudal base; A. 19 (22?); P. 12.

Above greenish gray, sides and



Depth  $3\frac{1}{8}$ ; head  $3\frac{3}{4}$ . Snout  $3\frac{1}{4}$  in head from snout tip; eye  $3\frac{2}{5}$ ,  $1\frac{1}{10}$  in snout; maxillary reaches  $\frac{1}{5}$  in eye, expansion  $2\frac{1}{3}$  in eye, length  $2\frac{4}{5}$  in head from snout tip; teeth in villiform bands in jaws, without canines; teeth on vomer and palatines, none on tongue; interorbital elevated. Scales 65 in lateral line; 7 scales above lateral line, 17 below, predorsal about 21 forward to occiput or nearly opposite hind eye edge, 7 rows on cheeks inclusive of preopercle flange. D. X, 10, third spine  $\frac{2}{3}$  in total head length, first ray 3; A. III, 8, third spine  $3\frac{1}{2}$ , first ray 3; least depth of caudal peduncle  $2\frac{2}{3}$ ; pectoral  $1\frac{1}{4}$ ; ventral  $1\frac{2}{3}$ ; caudal  $2\frac{1}{2}$  in combined head and body to caudal base, deeply forked with



belly silvery. Lateral blackish longitudinal row of obsolete blackish spots. Yellowish lateral streak to below middle of dorsal. Fins clear. Caudal blackish, also last dorsal rays. Length 515 mm.



as much too broad. Likewise the figure does not show the lower lobe of the pectoral or the last dorsal and anal rays prolonged. The figure in question also has the first dorsal spine too long. In materials before me the penultimate dorsal ray is only  $\frac{1}{3}$  length of last ray.



5785. Baganga Bay, Mindanao.  
May 13, 1908. Length 330 mm.

One example. Camp Overton Anchorage,  
Mindanao. Electric light. August 5,  
1909. Length 137 mm.

5504. Catbalogan, Samar. April  
14, 1908. Length 329 mm.

5511. Catbalogan. April 15, 1908.  
Length 558 mm.

One example. East side Tagbalaran  
Strait, Bohol. April 9, 1908. Length  
47 mm.

10876, 10877. Jolo Anchorage, Jolo.  
March 5, 1908. Length 245 to 379 mm.

5863. Malabang, Mindanao. May  
21, 1908. Length 458 mm.

✓ 4509. Manila market. December 12,  
1907. Length 317 mm.

6327. Manila market. July 11, 1908.  
Length 354 mm.



785

Apsilus fuscus Valenciennes

Apsilus fuscus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 549, pl. 168 bis. —  
Porto Praya, Cape Verde Islands. —  
Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 82 (compiled). — Guichenot, notes Ile Réunion, vol. 2, 1862, p. 24. — Klunzinger, Verh. zool. bot. Gesell. Wien, vol. 20, 1870, p. 705 (Koseir, Red Sea). — Jordan and Starks, Annals Carnegie Mus., vol. 11, nos. 3-4, 1917, p. 450 (Colombo, Ceylon). —  
Barnard, Annals South African Mus., vol. 21, pt. 2, October 1927, p. 647 (Delagoa Bay).



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4763, 4764, 4765. Hogas Point,  
Panay. February 4, 1908. Length 347  
to 375 mm.

20494. Port Galera, Mindoro.  
June 9, 1908. Length 253 mm.

8219. River at Pasacao, Ragay  
Gulf, Luzon. March 9, 1909. Length  
331 mm.

4918. Simulac Island. February  
20, 1908. Length 610 mm.

5580. San Miguel Harbor, Ticao  
Island. April 21, 1908. Length 330 mm.

7122. San Vicente Harbor, Luzon side.  
November 13, 1908. Length 365 mm.



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D. 5561. Teomabal Island (NW.),  
S. 36° W., 0.2 mile (lat. 5°50'45"N.,  
long. 121°01'15"E.), vicinity of Jolo.  
September, 19, 1909. Length 38 to  
183 mm. Twenty examples. All  
young and show bases of upper  
caudal rays blackish.

11742. Sandakan market, Borneo,  
Dutch East Indies. March 2, 1908.  
Length 308 mm.

U. S. N. M. no. 50738. Wakanoura.  
R. S. Jordan and J. O. Snyder. Length  
478 to 566 mm. As Tylosurus  
schismatorhynchus. Two examples.

U. S. N. M. no. 52031. Negros. Dr.  
Bashford Dean. Length 425 mm.  
As Tylosurus giganteus.

U. S. N. M. no. 52366. Apia, Samoa.  
Bureau of Fisheries (07571). 1905.  
Length 460 mm. As Tylosurus  
giganteus.



U. S. N. M. no. 57604. Japan.  
P. L. Jouy. Length 390 to 508 mm.  
Two examples. As Tylosurus  
schismatorhynchus.

U. S. N. M. no. 57948. Zamboanga.  
August 21, 1906. Dr. E. D. Mearns.  
Length 85 mm. As Tylosurus leirus.  
With large black cutaneous flap on  
the under surface of the mandible  
and the long black posterior dorsal  
rays reach  $\frac{3}{4}$  in caudal fin.

U. S. N. M. no. 72167. Iloilo. R. C.  
Mac Gregor. Length 199 mm. As  
Tylosurus giganteus.

U. S. N. M. no. 83421. Fiji. Wilkes  
Exploring Expedition. Length 738 mm  
(caudal tip damaged). Type of  
Strongylura fijiense.

A. N. S. P., no. 29639. Maui, Hawaiian  
Islands. R. C. Mac Gregor. Stanford University.



Strongylura appendiculata (Klunzinger)

Belone appendiculatus Klunzinger,

Verh. zool. bot. Ges. Wien, vol. 21, p.

580, 1871 (type locality: Red Sea).

Belone appendiculata Günther, Journ.

Mus. Godeffroy, vol. 8, pt. 16, p. 351, fig.

(head), 1909 (Muscat; Solomons).

Thalassosteus appendiculatus Jordan,

Evermann, Tanaka, Proc. Cal. Acad. Sci.,

ser. 4, vol. 16, p. 651, Nov. 14, 1927 (Honolulu).

Strongylura appendiculata Fowler, Mem.

Bishop Mus., vol. 10, p. 74, 1928 (compiled).



Depth 17 to 19, body moderately compressed, subcylindrical tail little higher than wide; head  $3\frac{1}{2}$ . Snout  $5\frac{1}{2}$  to 6 in head; eye  $8\frac{1}{2}$  to 9, somewhat large; behind tip of lower jaw low compressed bony beel  $\frac{1}{3}$  eye depth or less; teeth moderately strong, rough area of jaw edges moderately wide; tongue smooth. Gill opening extends below front eye edge.

Scales moderately small. Lateral line low, with slight beel on tail.

D. 26, begins behind anal origin, last rays reach nearly to caudal; A. 22; lower caudal lobe longer; P. 12; ventral  $1\frac{1}{2}$  times longer than eye, origin midway between hind eye edge and caudal base.



1  
The Fishes of the Families Pseudochromidae,  
Lobotidae, Tempheridae, Priacanthidae,  
Lutjanidae, Pomadasysidae, and  
Theraponidae, collected by the  
United States Bureau of Fisheries  
Steamer "Albatross," chiefly in  
Philippine Seas and adjacent  
waters

By  
Henry W. Fowler  
Of the Academy of Natural Sciences of  
Philadelphia



Sea green above, below silvery.  
Snout, teeth and top of head  
green. Fins blackish. Anal with  
black spot above. Length 470 to  
1000 mm. (Klunzinger.)

Red Sea, Arabia, Solomons,  
Hawaii. The Hawaiian specimen,  
forming the basis of the genotype  
of *Thalassotus* seems to agree.  
It is described with D. 25, A. 23,  
P. 13, scales 570. Jordan, Evermann  
and Tanaka wrongly credit Günther  
as the author of the species instead  
of Klunzinger.



## Introduction

2

In continuation of the study of the Albatross collections this paper represents the fourth installment in which I have been engaged. It includes the second part of the percoid series, the majority of which are valued market or commercial fishes. As in the preceding volumes most of the localities relate to the Philippines, though the other localities in the Netherlands Indies, China, Formosa and Oceania visited by the Albatross are also included. The prefatory remarks of the other volumes as to the organization and personnel of the scientific staff under the direction of Dr. Hugh M. Smith, apply equally well in the present work.



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Rhaphiobelone new genus

'ράφιον, a little needle, from ραφίς needle  
+ Belone, with reference to the very slender jaws.

Type. — Rhaphiobelone <sup>dammermanni</sup> ~~philippina~~ new species.

Body elongate, moderately compressed, slender. Head long, jaws prolonged into extraordinary slender and elongated points so head barely less than rest of entire body. Upper jaw only half or less than half of lower jaw and no dentition on lower anterior prolonged portion of mandible. Canines small, though



well developed. Eye rather large. Maxillary concealed. Interorbital flattened. Scales small, not present on head except occipital region. Dorsal inserted at first fifth of anal base, front rays but little higher than others. Anal much larger and with front rays elevated, though not forming very distinct lobe. Caudal peduncle broadly depressed, so its width much greater than its depth. Caudal truncate. Pectoral high, moderate. Ventral inserted



midway between nasal cavity and caudal base, small, reach  $3\frac{4}{5}$  to vent. Color with silvery.

diagnosis.

This well marked genus differs from the known genera in the above combination of characters. It greatly suggests Belone in its extremely depressed and similar caudal peduncle. On the contrary it differs at once from Belone in the absence of gill rakers. It further differs from this and all the known genera in the extraordinary prolonged



long, slender, needle-like jaws.

Rhaphiobelone <sup>deanyserrumani</sup> ~~philippina~~ new species

Depth 33 to 39, body with more or less flattened sides, width of caudal peduncle  $1\frac{1}{3}$  to  $1\frac{2}{5}$  in eye; head  $2\frac{1}{10}$  to  $2\frac{1}{5}$ , width  $18\frac{2}{3}$  to  $23\frac{1}{3}$ . Snout  $1\frac{1}{3}$  to  $1\frac{2}{5}$  in head measured from snout tip; mandible tip to eye  $1\frac{1}{5}$  to  $1\frac{1}{4}$ ; eye  $13\frac{1}{3}$  to 15 in head from snout tip,  $9\frac{2}{3}$  to  $11\frac{1}{3}$  in snout from snout tip, little greater than interorbital; maxillary point to eye  $3\frac{4}{5}$  to 4 in head posteriorly;



canines vertically erect; interorbital  $19\frac{1}{2}$  to  $23\frac{2}{3}$ , level, with wide deep median depression.

Scales 190 to 200 in lateral axial series to caudal base and 7 to 9 more on latter; 122 to 126 predorsal forward to occiput; 14 above lateral line to dorsal origin. Lateral line continuous along lower side of body at least far back as anal base and tubes simple.



D., II, 16 or II, 17, first branched ray  
11 to 14 in total head length; A.  
II, 20 to II, 23, first branched ray  
 $7\frac{1}{2}$  to  $7\frac{3}{5}$ ; caudal  $6\frac{7}{8}$  to  $7\frac{2}{3}$ ,  
rounded, truncate behind; pectoral  
 $7\frac{4}{5}$  to  $8\frac{1}{2}$ ; ventral  $13\frac{3}{4}$  to 14,  
reaches 3 to  $3\frac{7}{8}$  to vent.

Back and upper surfaces brown,  
sides and lower surfaces silvery  
white. Iris silvery white. Two dark  
median parallel lines down back.  
Silvery gray lateral axial band,  
widest on tail or along and close



below caudal expansion. Fins all more or less pale or whitish.

Philippines.

Diagnosis. Contained in genus.

Type. — U. S. N. M. No.

Three examples. Jolo, Jolo Island.

Electric light. February 8, 1908.

Length 82? to 103? (beak broken) mm.

Three examples. Taal anchorage.

Electric light. February 20, 1909.

Length 108 to 162 mm. Largest type, other 2 paratypes.



19849. Maculabo Island. June 13,  
1909. Length 165 mm. (beak damaged).

One example. Pandanon Island.

March 24, 1909. Length 75 mm.

One example. Port Dupon.

March 17, 1909. Length 53 mm.

20830. Varadero Bay, Mindoro.

July 23, 1908. Length 135? (beak  
damaged) mm.



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Genus Athlenes Jordan and Fordice  
Athlenes Jordan and Fordice, Proc.  
U. S. Nat. Mus., vol. 9, p. 342, 1886.

(Type, Belone hians Valenciennes,  
monotypic.)

Athlenes Jordan and Evermann, Bull.  
U. S. Nat. Mus., no. 47, pt. 1, p. 717,  
1896. (Type, Belone hians Valenciennes,  
virtually.) (Corrected orthography.)

Body elongate, very slender, little  
compressed. Both jaws extended as beak,  
lower somewhat longer, much longer  
in young and very young suggestive



of hemiramphids. Each jaw armed with band of small sharp teeth, beside which series of long wide-set sharp conical unequal teeth. No teeth on vomer or palatines. Gill rakers obsolete. Bones usually more or less green. Scales small, thin. Lateral line extends along lower side of belly, becomes median on tail. No finlets. Dorsal fin mostly elevated in front. Caudal short, unequally lunate or forked. Pectorals moderate. Ventrals small, inserted behind



middle of body.

Comparatively large voracious  
fishes, mostly in tropical and  
subtropical seas,



<sup>b</sup>  
Attennes hians (Valenciennes)

Belone hians Valenciennes, Hist. Nat.  
 Poiss., vol. 18, p. 432, <sup>pl. 548,</sup> 1846. (type  
 locality: Havanna; Bahia). — Günther,  
 Cat. Fish. Brit. Mus., vol. 6, p. 248, 1866  
 (copied); Journ. Mus. Godeffroy, vol.  
 8, pt. 16, p. 353, fig. (head) 1909 (Bermuda,  
 Muscat, Red Sea, Madras, Hawaiian  
 Islands). — Weber, Siboga Exped., vol.  
 57, Fische, p. 123, 1913 (Dobo, Aru  
 Islands).



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Athlennes hians Jenkins, Bull. U. S.  
Fish Comm., vol. 22, 1902, p. 433 (1903)  
(Honolulu). — Snyder, Bull. U. S. Fish  
Comm., vol. 22, 1902, p. 521 (1904) (Lahaina,  
Maui). — Jordan and Evermann, Bull.  
U. S. Fish Comm., vol. 23, pt. 1, 1903, p.  
126, fig. 40 (1905) (Honolulu). —  
Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 7,  
p. 332, 1911 (name). — Weber and Beaufort,  
Fishes Indo-Austral. Archipel., vol. 4,  
p. 131, fig. 49, 1922 (Pulu Wei; Vemarang;  
Aru Islands).



Tylosurus hians (Gilchrist and  
Thompson, Ann. South Afric. Mus.,  
 vol. 6, p. 265, 1908-11 ( Natal ); Ann.  
 Durban Mus., vol. 1, no. 4, p. 310, 1917  
 (compiled).

Ablettes hians Jordan and Jordan, Mem.  
 Carnegie Mus., vol. 10, p. 18, 1922 (reference).

— Fowler, Proc. Acad. Nat. Sci. Philadelphia,  
 1925, p. 201 ( Natal coast; Durban ); 1927,  
 p. 261 ( Orion; Philippines ). — Jordan,  
Evermann, Tanaka, Proc. Cal. Acad. Sci.,  
 ser. 4, vol. 16, p. 652, November 14, 1927  
 (Honolulu). — Herre, Philippine Journ.



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Sci., vol. 36, no. 2, p. 217, pl. 1, fig. 1,  
June 1928 (Manila Bay). — Fowler,  
Mem. Bishop Mus., vol. 10, p. 74, pl.  
3E (Honolulu, Hawaii); vol. 11, no. 5,  
p. 319, 1931 (Honolulu).

Belone crocodila (not Le Sueur) Bleeker,  
Nat. en Geneesk. Arch. Ned. Indie,  
vol. 2, pt. 3, p. 512, 1845 (Batavia).

Belone melanostigma (Ehrenberg) Valenciennes,  
Hist. Nat. Poiss., vol. 18, p. 450, 1846 (type  
locality: Red Sea). — Günther, Cat. Fish.  
Brit. Mus., vol. 6, p. 241, 1866 (copied).

— Klunzinger, Verh. zool. bot. Ges. Wien,



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vol. 21, p. 581, 1871 (Red Sea). — Day,  
Fishes of India, pt. , p. 509, 18  
(Bombay; India); Fauna British  
Ind. Fishes, vol. 1, p. 418, 1889. —

Sauvage, Hist. nat. Madagascar, Poiss.,  
p. 526, 1891 (name).

Tylosurus melanostigma Jordan and  
Evermann, Proc. U. S. Nat. Mus., vol. 25,  
p. 329, 1902 (Formosa). — Jordan  
and Richardson, Mem. Carnegie Mus.,  
vol. 4, p. 175, 1909 (copied).

Belone gracilis (not Lowe) Schlegel,  
Fauna Japonica, Poiss., pt. 2, p. 246, pl.



110, fig. 1, 1843 (Japan). —

Bleeker, Verh. Batavia. Gen. (hal.  
Ich. Jap.), vol. 25, p. 18, 1853 (Awa-  
gura, Japan); (hal. Ich. Jap.),  
vol. 26, pp. 5, 116, 1857 (Nagasaki);  
Act. Soc. Ind. Neerl., vol. 3, no. 3, p. 6  
1857-58 (Japan); vol. 5, no. 9, p. 3, 1858-  
59 (Nagasaki).

Mastacembelus gracilis Bleeker, Nederl.  
Tijds. Dierk., vol. 3, pp. 111, 230, 1866.



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Belone schismatorhynchus Bleeker, Nat.  
Tijds. Nederl. Indië, vol. 1, p. 95, 1850  
(1851) (type locality: Batavia); Verh.  
Batavia. Genoot. (Snoek. Vissch.), vol.  
24, p. 15, 1852 (Batavia); Nat. Tijds.  
Nederl. Indië, vol. 10, p. 362, 1856 (Ternate).  
— Kner, Reise Novara, Fische, p. 322, 1865  
(Java). — Günther, Cat. Fish. Brit. Mus.,  
vol. 6, p. 239, 1866 (Red Sea). — Meyer,  
Anal. Soc. Espan. Hist. Nat., Madrid,  
vol. 14, p. 38, 1885 (Manila Bay). —  
Elera, Cat. Fauna Filip., vol. 1, p. 573,  
1895 (Luzon, Manila, Batangas, Masugbu).



— Ishikawa and Matsuura, Prelim.  
Cat. Fish. Mus. Tokyo, p. 18, 1897.

Mastacembelus schismatorhynchus  
Bleeker, Atlas Ichth. Ind. Néerl.,  
vol. 6, p. 49, pl. ( ) 268, fig. 2, 1866-72  
(Java, Ternate, Japan).

Tylosurus schismatorhynchus Jordan  
and Snyder, Annot. Zool. Jap., vol. ,  
p. 61, 1901 (reference). — Jordan and  
Starks, Proc. U. S. Nat. Mus., vol. 26,  
p. 528 (Nagasaki, Wakanoura). —

Jordan and Richardson, Mem. Carnegie  
Mus., vol. 4, p. 175, 1909 (Takao, Formosa).



Tylosurus caeruleofasciatus Stead,  
New Fisher New South Wales, No. 1,  
p. 3, pl. 1, Sep. 1908 (type locality:  
Port Stephens).

Aithlenes caeruleofasciatus Ogilby, mem.  
Queensland Mus., vol. 5, p. 130, pl. 14,  
July 10, 1916 (Moreton Bay).



Depth  $14\frac{1}{4}$  to  $14\frac{4}{5}$ , strongly compressed, deepest about anal origin; head  $3\frac{1}{4}$  to  $3\frac{7}{8}$ , width  $7\frac{1}{8}$  to  $8\frac{1}{5}$ . Snout  $1\frac{1}{2}$  to  $1\frac{3}{5}$  in head; eye  $8\frac{4}{5}$  to  $9\frac{1}{4}$ ,  $6\frac{1}{5}$  to 7 in snout, 1 to  $1\frac{1}{8}$  in interorbital; maxillary reaches eye, length to point in front  $2\frac{3}{4}$  to  $3\frac{1}{4}$  in head posteriorly; canines small, more or less inclined little backward; interorbital 9 to 10 in head from snout tip, with broad median depression.

Scales 445 to 470 in lateral axial series to caudal base; 350 to 360 predorsal forward to occiput; 25 above lateral line to dorsal origin; 14 or 15



on postocular to preopercle ridge.  
Scales with 20 to 27 vertical  
parallel striae each side of  
median vertical line, none  
continuous, at least in small  
or young.

D. II, 22 or II, 23, first branched  
ray  $4\frac{4}{5}$  to 6 in head to snout  
tip; A. II, 22 to II, 24, first  
branched ray 4 to  $4\frac{1}{5}$ ; least  
depth of caudal peduncle  $1\frac{2}{3}$   
to  $1\frac{3}{4}$  in eye; caudal  $2\frac{4}{5}$  to  
 $3\frac{2}{3}$  in head, well forked;  
pectoral  $3\frac{1}{5}$  to 4; ventral  $4\frac{3}{4}$   
to  $4\frac{7}{8}$ .

Back brown, sides and lower  
surfaces bright silvery white.  
Pale bluish band along edge of  
dark color of back and in



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band dozen or more dark or dusky blotches. Iris silvery white. Fins all more or less brownish, lobes of dorsal and anal, and pectoral ends, dusky to blackish.

Red Sea, Natal, India,  
Philippines, Formosa, Japan,  
Queensland, New South Wales,  
Hawaii.

A 437. Manila market. March 12,  
1908. Length 434 mm.

A 437. Manila market. March 13,  
1908. Length 427 mm.



Genus Xenentodon Regan

Xenentodon Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 7, p. 332, 1911. (Type

Belone cancila Buchanan-Hamilton, designated by Jordan, Genera of Fishes, pt. 4, p. 540, 1920.)

Body greatly elongated, cylindrical or subcylindrical. Caudal peduncle compressed, deeper than wide. Head long. Premaxillaries and mandible prolonged into beak. Each jaw with a band of fine small teeth and a row of canines. No teeth on palate. Gill openings wide. No gill rakers. Only third pair of upper pharyngeals denticulous, lower small, narrow and ends pointed or rounded. Scales small. Lateral line low, without keel on caudal peduncle. Dorsal and anal origins opposite. Caudal truncate or slightly rounded.

Fresh waters India, Ceylon, Burma, Malaya and the East Indies.



Analysis of species

a.' depth 8 to 12; Indian. cancila.

a.' depth 14 to 18; East Indian. canciloides.



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✓ Xenentodon cancila (Buchanan-Hamilton)  
Esch cancila Buchanan-Hamilton, Fishes  
of Ganges, pp. 213, 380, pl. 27, fig. 70,  
1822. (type locality: ponds and smaller  
rivers of Gangetic provinces).

Belone cancila Valenciennes, Hist. nat.  
Pois., vol. 18, p. 455, 1846 <sup>Madras, Rangoon</sup> (Aliphey, Bombay).  
— McClelland, Calcutta Journ. nat. Hist.,  
vol. 3, p. , 1842 ( ). —

Bleeker, Verhand. Batavia. Genoot. (hal.  
Bengal. Hind.), vol. 25, pp. 14, 29, 72, 145,  
1853 (compiled). — Mason, Burmah  
nat. Resources, p. 689, 1860. — Day,  
Fishes of Malabar, p. 165, 1865; Proc.  
Zool. Soc. London, 1865, p. 369  
(Kurrivananoor). — Günther, Cat.  
Fishes Brit. Mus., vol. 6, p. 253, 1866 (Ceylon).  
— Day (compiled).



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— Martens, Preuss. Exped. Ost Asien,  
vol. 1, p. 400, 1876 (Lanan Sriang,  
Borneo). — Day, Fishes of India,  
pt. 3, p. 511, pl. 118, fig. 5, 1877.

\* Vinciguerra, Ann. Mus. Civ. Genova,  
p. 659, 1882-83 (Feb. 3, 1883)  
(Munla, Burma). — Day, Fauna  
British India, Fishes, vol. 1, p.  
420, fig. 169, 1889 (compiled).

Journ. ~~&~~ Linn. Soc. London, vol. 12, Zool.,  
p. 571, 1876 (Alcock);

— Key, Locker & in



pt. 4 October 31, 1916, p. 193 (off New South  
Wales).

Diphrutes macrolepidotus Cantor, Journ.  
Asiat. Soc. Bengal (Cat. Malay. Fish.), vol.  
18, part 1, 1849, p. 1141 (Pinang, Singapore,  
Malay Peninsula).

Saurichthys macrolepidotus Bleeker, Atlas  
Ichth. Ind. Neerl., vol. 9, 1878, p. 29 (Sumatra,  
Pinang, Singapore, Java, Bali, Sumbawa, Solor,  
Timor, Celebes, Ternate, Batjan, Buru, Obi  
major, Amboina, Ceram, Banda, Ligon, New Guinea).

Saurichthys microlepidotus Bleeker, l.c.,  
plate (5) 367, fig. 1.

Chaetodon bifasciatus Shaw, Gen. Zool., vol. 4,  
1803, p. 342. Indian Seas.

Chaetodon mycterzans Gray, Cat. Fish. Grouper,  
vol. 2, 1854, p. 76. no locality (On Valentyn).

Heniochus intermedius Steindachner, Sitzb.

Abad. Wiss. Wien, band 102, heft 1, 1893, p. 222,  
plate 2, fig. 2. Red Sea at Suez.



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— Duncker, Mitteil. Naturh. Mus.

Hamburg, vol. 21, p. 169, 1903 (1904)  
(Kuala Lumpur, Pahang River); vol.  
29, p. 257, 1911 (compiled).

Mastacembelus cancila Bleeker, Nederl.  
Tijds. Dierk., vol. 2, p. 35 (Siam),  
p. 176 (Siam; copied), 1865.

Xenentodon cancila Regan, Ann. Mag.  
Nat. Hist., ser. 8, vol. 7, p. 332, 1910  
(name). — Fowler, Proc. Acad. Nat.  
Sci. Philadelphia, p. 6, 1919 (Ganges  
River, India).

Belone gracii Sykes, Trans. Zool. Soc.  
London, vol. 2<sup>d</sup>, p. 367, pl. 63, fig. 4, 1841  
(type locality: Mota Mota River, Poona, Dukhim).  
— Jerdon, Madras Journ. Liter. Sci.,  
p. 345, 1849.



Belone grayi Bleeker, Verh. Batavia.  
Genoot. (hal. Ich. Bengal. Hind.), vol.  
25, p. 26, 1853 (copied).

? Esoy indica McClelland, Calcutta  
Journ. Nat. Hist., vol. 2, p. <sup>(573)</sup>582, 1842.  
(type locality: Loodianah).  
Bleeker, Verh. Batavia. Genoot.  
(hal. Ich. Bengal. Hind.), vol. 25, p.  
24, 1853 (copied).



Depth  $13\frac{1}{3}$ ; head (beak ends broken)  $2\frac{3}{4}$ , width 8. Snout  $1\frac{4}{5}$  in head, from end of frontal extension  $3\frac{1}{5}$ ; eye 7 in head, 4 in snout, greater than interorbital; maxillary reaches  $\frac{1}{8}$  in eye, length from frontal extension 5 in head; interorbital 8, level, with broad median concave groove. No gill rakers; gill filaments  $2\frac{1}{3}$  in eye.

Scales all fallen and pockets largely obliterated. Predorsal pockets 130 to occiput.

D. II, 14, fin height 7 in total head length; A. II, 15, fin height  $6\frac{1}{2}$ ; least depth of caudal peduncle  $1\frac{1}{3}$  in eye;



c.<sup>2</sup> no black lateral blotch on body.

j.<sup>1</sup> Second dorsal spine not longer than others.

k.<sup>1</sup> no black spot on temple.

l.<sup>1</sup> snout moderate.

m.<sup>1</sup> no bluish streaks before eye.

n.<sup>1</sup> no oblique green bands on cheeks.

o.<sup>1</sup> Head not darker or greatly contrasted with body.

p.<sup>1</sup> ~~Each scale of body with white, golden or dark spot.~~ no longitudinal bands on body; anal longer than high; 5 scales above lateral line.

q.<sup>1</sup> Each scale of body with white, golden or dark spot.

r.<sup>1</sup> Depth  $2\frac{1}{4}$  to  $2\frac{2}{5}$ . haematopterus.

r.<sup>2</sup> Depth  $2\frac{3}{5}$ . choerorhynchus.

r.<sup>3</sup> Depth  $2\frac{2}{3}$ . mahsonoides.

q.<sup>2</sup> Each scale of back with black vertical basal streak; depth  $2\frac{1}{2}$ . chrysostomus.

13 names only



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caudal broken off; pectoral  
(damaged) about  $\frac{1}{2}$  of postocular;  
ventral nearly long as eye,  
fin origin slightly nearer  
vertical edge of preopercle  
than caudal base.

Large dull ~~fish~~ brown  
(stained greenish). Pale narrow  
lateral axial streak, most  
distinct between dorsal and  
anal and width about  $\frac{1}{4}$  of  
eye.

India, Ceylon, Burma, Siam,  
Borneo. My example in very poor  
preservation after many years in  
alcohol.

A. N. S. P., no. 7571. Ganges River,  
India. Dr. Marmaduke Burroughs.  
Length 138 mm. (caudal and heels broken).



behind gill opening to above hind part of pectoral.

hypselopterus:

h.<sup>2</sup> Black blotch behind pectoral end; dark vertical bars variable, reticulate; body rather slender. reticulatus.

h.<sup>3</sup> Large black blotch at pectoral end. harab

h.<sup>4</sup> Large black blotch above middle of pectoral. atkinsoni.

h.<sup>5</sup> Small black blotch before middle of pectoral. frenatus.

g.<sup>2</sup> Usually more or less complete median whitish axial line and several others above and below. callopterus.

f.<sup>2</sup> Dark lateral blotch fading with age; each scale with white spot. nebulosus.

e.<sup>2</sup> Dark vertical band on cheek; body rather slender.

i.<sup>1</sup> Dark vertical band on cheek. variegatus.

i.<sup>2</sup> Broad dark vertical band on cheek, another on preopercle. genivittatus.



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Xenentodon canciloides (Bleeker)

Belone canciloides Bleeker, Naturk.

<sup>(429)</sup>  
Tijds. Nederl. Indië, vol. 5, p. 454, 1853  
(type locality: Pontianak; Pangabolang,  
Borneo); Act. Soc. Sci. Ind. Néerl.,  
no. 9, vol. 3, p. 7, 1857-58 (Palembang);  
(Acht. Sumat.), vol. 8, p. 55, <sup>1859</sup> (Telok-  
betong, Pangabuang, Palembang);  
(Sumatra), vol. 8, p. 2, 1860 (Lahat).

— Weber, Zool. Ergeb. Reise Ned. Ost.  
Ind., vol. 3, p. 456, 1894 (Borneo;  
Sumatra). — Volz, Zool. Jahrb., Syst.,  
vol. 19, p. 393, 1903, <sup>(1904)</sup> (Banabak);  
Revue Suisse, Zool., vol. 12, p. 472, 1904  
(<sup>Xungei Mahe; Djapura;</sup>  
<sup>Indragiri; Wampou</sup>); Naturk. Tijds. Nederl.  
Indië, vol. 66, p. 177, 1907 (Lampong,  
Palembang, Indragiri, Batu Pahra,  
Deli, Langkat).

— Elera, Cat. Fauna Filip., vol. 1, p. 573,  
1895 (Samar, Borongan).



Mastacembelus canciloides Bleeker,  
Atlas Ichth. Ind. Néerl., vol. 6, p.  
46, pl. 254 ( ), fig. 1 (Borneo;  
Sumatra).

Xenentodon canciloides Regan, Ann.  
Mag. Nat. Hist., ser. 8, vol. 7, p. 332,  
1911 (name). — Weber and Beaufort,  
Fishes Indo Austral. Archip., vol.  
4, p. 133, fig. 50, fig. 51 (dentition)  
(Taluk and Djambi, Sumatra; Putus  
Sibau, Rann and Tepu, Borneo).

Belone cancila (not Buchanan-Hamilton)  
Martens, Preuss. Exped. Ost Asien,  
vol. 1, pp. 307, 400, 1876 (Danau  
Sriang, interior of Borneo). —  
Vaillant, Notes Leyden Mus., vol.  
24, p. 31, 1902.



Depth  $3\frac{4}{5}$  to 4; head  $3\frac{1}{4}$  to  $3\frac{1}{2}$ , width  $1\frac{7}{8}$  to 2. Snout  $3\frac{4}{5}$  to 4 in head from snout tip; eye  $3\frac{1}{4}$  to 4, greater than snout in young to subequal with age, greater than interorbital in young to  $1\frac{1}{4}$  in interorbital with age; maxillary reaches  $\frac{1}{4}$  in eye, length 3 to  $3\frac{1}{8}$  in head from snout tip; teeth minute, weak; interorbital  $3\frac{1}{2}$  to  $3\frac{3}{5}$ , slightly convex. Gill rakers  $10 + 24$ , lanceolate, slender,  $1\frac{1}{5}$  in gill filaments or  $\frac{1}{2}$  of eye.

Scales 61 to 63 in lateral line to caudal base and 3 or 4 more on latter; 7 scales above lateral line,  $1\frac{1}{2}$  below, 26 to 28, <sup>predorsal</sup> forward opposite eye center, 4 or 5 rows on cheeks to preopercle ridge. Scales with 10 or 11 basal radiating



✓ Depth 14 to 18, cylindrical; head <sup>8 1/2 to 9 in snout,</sup> 2 1/3 to 2 2/5. Eye <sup>8 1/2 to 9 in snout,</sup> equals or little less than interorbital, 2 1/2 to 3 in postorbital; 2/3 of maxillary hidden by preorbital; canines short, subulate, vertical; tongue smooth; mandible depth below pupil less than half of eye; upper surface of head with very deep median groove, tapering anteriorly and continued as narrow groove on beak.

Scales 200 to 220 in median lateral series; 21 scales above lateral line to dorsal origin. Opercle not scaly.

D. II, 15, first branched ray 4 1/3 in total head length; A. II, 15, first branched ray 4 1/2; least depth of caudal peduncle nearly equals eye; caudal slightly rounded, 5 1/5 in total head length; pectoral 5 1/3; ventral 1 1/2 to 1 2/3 in pectoral, inserted midway between preopercle and caudal base.



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Brownish, more or less silvery  
below. Brownish lateral band,  
broader and silvery on Tail. Fins  
hyaline, caudal dusky. Ventrals  
sometimes tipped with blackish.  
Length 275 mm. (Weber and Beaufort.)

East Indies.



Insert 193

Belmonte

page 323

3 lines



Genus Belone Cuvier

Belone Cuvier, Règne Animal, vol.  
 2, p. 185, <sup>(Dec. 1816)</sup> 1817. (Type Esox belone  
Linnaeus, monotypic.)

Belona Le Sueur, Journ. Acad. Nat.  
 Sci. Philadelphia, vol. 2, pt. 1, p. 124,  
 1821. (Type Esox belone Linnaeus.)

Acus P. L. S. Müller, Lin. Nat. Syst.,  
 vol. 4, p. 341, 1774. Atypic. (Type  
Esox belone Linnaeus.) L.c., Supplement,  
 p. 7 in register, 1776. (Inadmissible.)

Mastacembelus (not Gronow 1763)  
Klein, Neuer Schauplatz, vol. 3, p. 271,  
 1776. (Type Esox belone Linnaeus,  
 designated by Bleeker, Nederl. Tijds.  
 Dierk., vol. 3, p. 214, 1866.) (Inadmissible.)



Raphistoma Rafinesque, Analyse  
de la nature, p. 19, 1815. (Type  
Esoc belone Linnaeus, as Raphistoma  
Rafinesque proposed to replace  
"Belone Gronow", which name not  
used by Gronow.)

Ramphistoma Swainson, Nat. Hist.  
Animals, vol. 2, p. 296, 1839. (Type  
Ramphistoma vulgaris Swainson =  
Esoc belone Linnaeus, monotypic.)

↑ Petalichthys Regan, Ann. Mag. Nat. Sci.,  
Hist., ser. 7, vol. 4, p. 129, 1904.  
(Type Petalichthys capensis Regan,  
~~monotypic~~.)

Platybelone Towler, Proc. Acad. Nat.  
Sci. Philadelphia, 1919 (Jan.), p. 2.  
(Type Belone platyura Bennett,  
orthotypic.)

Tropidocaulus Ogilby, Proc. Roy. Soc.  
Queensland, vol. 31, pt. 5, p. 45, Jan. 20,  
1920. (Type Belone platyura Bennett,  
to replace Eurycaulus Ogilby.)



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Raphistoma Rafinesque, Analyse  
de la nature, p. 19, 1815. (Type  
Esox belone Linnaeus, as Raphistoma  
Rafinesque proposed to replace  
"Belone Gronow", which name not  
used by Gronow.)

Ramphistoma Swainson, Nat. Hist.  
Animals, vol. 2, p. 296, 1839. (Type  
Ramphistoma vulgaris Swainson =  
Esox belone Linnaeus, monotypic.)

Eurycaulus (not Fairmaire 1868) Ogilby,  
Proc. Roy. Soc. Queensland, vol. 21,  
p. 91, 1908. (Type Belone platyura  
Bennett, orthotypic.)

Platybelone Fowler, Proc. Acad. Nat.  
Sci. Philadelphia, 1919 (Jan.), p. 2.  
(Type Belone platyura Bennett,  
orthotypic.)

Tropidocaulus Ogilby, Proc. Roy. Soc.  
Queensland, vol. 31, pt. 5, p. 45, Jan. 20,  
1920. (Type Belone platyura Bennett,  
to replace Eurycaulus Ogilby.)



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Body greatly elongated, compressed to cylindrical. Caudal peduncle sometimes depressed. Head compressed, level above. Premaxillaries and mandible prolonged, forming long beak. Jaws with band of conical teeth and series of moderately large pointed wide set teeth, lower much smaller than upper, which canine like. Teeth present or absent from vomer. Gill openings wide. Gill rakers moderate, lanceolate. Scales rather small. Lateral line low, not forming keel along caudal peduncle, which sometimes with keel above lateral line. Dorsal and anal nearly opposite, front branched rays highest and all rays joined with membranes. Caudal forked. Paired fins short.

Species few, in tropical seas. Petalichthys Regan seems to differ in no way from Belone as here understood.



# Analysis of species

- a.<sup>1</sup> Belone. Body compressed behind vent; without lateral keels.
- b.<sup>1</sup> Dorsal with 14 to 16 branched rays, anal 18 to 20. belone!
- b.<sup>2</sup> Dorsal with 12 branched rays, anal 13. capensis.
- a.<sup>2</sup> Platybelone. Body broadly depressed behind vent or at caudal peduncle; strong lateral keels present.
- c.<sup>1</sup> Dorsal with 11 or 12 branched rays, anal 15. platyura.
- c.<sup>2</sup> Dorsal with 15 or 16 branched rays, anal 22. natalensis.



Belone belone (Linnaeus)

Esox belone Linnaeus, Syst. Nat., ed. 12, pt. 1, p. 517, 1766 (type locality: European Ocean). — Walbaum, Artedi

Pisc., vol. 3, p. 87, 1792 (copied). — Lacépède, Hist. Nat. Poiss., vol. 5, pp. 295, 308, pl. 7, fig. 1, 1803 (all seas).

Belone belone Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1919, p. 2 (Mediterranean).

Belone acus Risso, Hist. Nat. Eur. Mérid., vol. 3, p. 443, 1826 (type locality: Nice).

Belone vulgaris Fleming, British Animals, p. 184, 1829 (type locality: British Isles).

Belone rostrata Faber, Fische Island, p. 152, 1829 (type locality: Iceland).



Hemiramphus europaeus Garrell,  
Mag. Nat. Hist., new ser., vol. 1, p.  
505, fig. 63, 1837 (type locality:  
Ipswich; young).

Belone gracilis Lowe, Proc. Zool. Soc.,  
London, 1839, p. 86 (type locality:  
Madeira).

Hemiramphus obtusus Couch, Zoologist,  
1848, p. 1978, figs. a-c (type locality:  
Mount's Bay).

Macrogathus scolopax Gray, Cat. Fishes  
Gronow, p. 147, 1854 (type locality:  
all seas of Europe).

Belone radiata Budge, Archiv.  
Anat. Phys. Wiss. Medizin, Müller,  
vol. 15, p. 383, pl. 12, figs. 9-10 (anatomy),  
1848 (no locality).

Belone linnéi Malm, Göteborgs och  
Bohusläns fauna, p. 553, 1877 (type  
locality: Göteborg).



Strongylura koseirensis (Klunzinger)

Belone koseirensis Klunzinger, Verh.

zool. bot. Ges. Wien, vol. 21, p. 579,

1871 (type locality: <sup>Koseir</sup> Red Sea).



Petalichthys capensis (not Günther  
1866) Regan, Ann. Mag. Nat. Hist.,  
ser. 7, vol. 14, p. 129, 1904 (type locality:  
Port Elizabeth); ser. 8, vol. 7, 1911, p.  
332 (name). — Thompson, Marine

Biol. Rep. South Africa, no. 3, p. 91,  
1916. — Lorman, Ann. Mag. Nat.

Hist., ser. 9, vol. 11, p. 320, 1922  
( Natal ). — Barnard, Ann. South  
African Mus., vol. 21, pt. 1, p. 255,  
~~June 1925~~ fig. 15 b (dorsal view of head),  
pl. 10, fig. 5, June 1925 (Table Bay,  
False Bay, Natal coast).



Depth 16 to 18,  $1\frac{1}{8}$  to  $1\frac{1}{6}$  in postocular; head  $3\frac{1}{8}$  to  $3\frac{1}{2}$  in body without caudal, width  $7\frac{1}{8}$  to  $7\frac{1}{2}$ . Snout  $1\frac{1}{2}$  to  $1\frac{3}{5}$  in head from snout tip; end of frontal extension or suture to eye  $4\frac{1}{2}$  to  $4\frac{3}{4}$  in rest of snout; eye 9 to  $9\frac{1}{2}$  in head from snout tip,  $5\frac{3}{4}$  to 6 in snout, greater than interorbital,  $2\frac{1}{8}$  to  $2\frac{1}{3}$  in postocular; maxillary reaches  $\frac{1}{6}$  in eye, entirely concealed when closed; interorbital  $2\frac{1}{5}$  to  $2\frac{1}{2}$  in postocular, level, with broad shallow depression medially behind. Gill rakers 4 or 5 + 24



little forward, variable broken though some few more or less broken as spots. In small examples dark bands become little broader on caudal peduncle and base of caudal, also extends up on vertical dorsals and anals but curving forward. Soft vertical fins with deep blue border and submarginal blackish line, and in young against submarginal blackish line rather broad brownish band. Pectorals mostly pale or yellowish, occasionally variably dusky. Ventrals pale, tentatively with dusky margin.

East Indies, Melanesia and Polynesia. Though Günther reports it from Hawaii through Garrett, likely this may have been the form later described by Jordan and Metz as Holacanthus potteri. We have, therefore, compared the type of Holacanthus potteri with this series of Philippine examples and find that it appears to differ chiefly in a slightly more barred color-pattern. In Holacanthus bispinosus the bands do not extend across the breast, head and predorsal region. Of this we are, however, not absolutely certain as the resulting color may in various degrees be <sup>due to</sup> the action of formaline. The type of Holacanthus potteri is very pale brown with dull cross bands or lines, only the soft vertical fins at all dark or dusky, the caudal all



to 26, lanceolate,  $1\frac{1}{2}$  in gill filaments, which  $\frac{1}{2}$  of eye.

Scales 200 to 270 in median lateral or axial series to caudal base; 120 to 153 predorsal scales to occiput, small and rounded on back. Smaller scales with 20 circuli, 10 or less in young; large lateral elongate scales with 30 to 50 close set circuli, becoming more or less incomplete with age.

D. II, 15 or II, 16, first branched ray  $5\frac{3}{4}$  to 6 in total head length; A. II, 18 or II, 19, first branched ray  $5\frac{1}{4}$  to  $5\frac{1}{2}$ ; caudal  $3\frac{1}{8}$  to  $3\frac{1}{4}$ , forked, little less forked in young;



Holacanthus potteri Jordan and Metz.

~~Holacanthus potteri Jordan and Metz,~~

~~Proc. U. S. Nat. Mus., vol. 42, 1912, p. 525,~~

~~plate 71, fig. 1. Honolulu. — Fowler, Bishop~~

~~Mus. Bull., no. 22, 1925, p. 28 (Honolulu).~~

~~— Fowler and Ball, Bishop Mus. Bull., no.~~

~~26, 1925 (1926), p. 18 (French Frigate~~

~~Shoals).~~

A very handsome species closely related to Holacanthus hispidus, differing only in the more distinct transverse dark bands and therefore more contrasted color pattern.

(Type.) 73911 U. S. N. M. Honolulu. F. A. Potter.



least depth of caudal peduncle  $1\frac{1}{2}$  to  $1\frac{3}{5}$  in eye; pectoral  $4\frac{1}{5}$  to  $4\frac{1}{3}$  in total head length; ventral  $5\frac{1}{2}$  to 6, origin slightly nearer caudal base than pectoral origin.

Brown above, side with broad ill defined silvery band and below whitish. Sides of head and eyes silvery white. Fins pale or transparent, dorsal and caudal slightly dusted with brown.

Eastern Atlantic from Iceland, British Isles, Mediterranean, Madeira, South Africa to Natal.



showing no trace of darker bands. Now in our small examples these dark cross bands are very conspicuous on the caudal of Holacanthus hispidus. There are also traces of them in some of the large examples. There are also traces, in some specimens at least, of dark or light transverse bands in the side of the head, as in Holacanthus potteri, though few if any across the predorsal or breast. Also, in view of this, and other examples of Holacanthus potteri we have examined in all stages from freshly caught specimens to those long in alcohol that it is a very closely allied species. The armature of the preorbital and preopercle as extended by Jordan and Jordan, are not valid characters. Our series show them simply as variants, evidently due to age or the individuals. We can find nothing to distinguish the nominal Centropyge tutuiflax.



I fail to distinguish Petalichthys  
capensis Regan from the common  
European gar fish Belone belone.  
It is described with 22 lower  
gill rakers and but 11 pectoral  
rays. This latter character  
recalls the imperfectly noticed  
Belone 11 radiata Budge. It was  
based apparently more on  
anatomical details, chiefly dental  
counts, rather than careful  
comparison with Belone belone.



IN RE

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O. M. HELFF, Ph.D., RESEARCH ASSOCIATE

September 3, 1930

*For*

Director, Academy of Natural  
Sciences of Philadelphia  
Logan Square  
Philadelphia, Pa.

Dear Sir

I wish to acknowledge with very many thanks the copy of  
Cope's Contributions to the Herpetology of New Granada and Argentina.  
We shall add it to our collection of vertebrate zoology papers recently  
collected.

Very truly yours

*G K Noble*

GKN S



A. N. S. P., No. 7575. Mediterranean.  
Dr. W. S. W. Ruschenberger. Length  
375 mm.

A. N. S. P., Nos. 7576 to 7583.  
Mediterranean. C. L. Bonaparte  
(333). Dr. J. B. Wilson. Length  
230 to 407 mm.



Depth  $1\frac{1}{2}$  to  $1\frac{4}{5}$ ; head  $3\frac{1}{8}$  to  $3\frac{2}{3}$ , width  $1\frac{1}{3}$  to  $1\frac{2}{5}$ . Snout  $3\frac{1}{10}$  to  $3\frac{1}{5}$ ; eye  $2\frac{1}{2}$  to 3, greater than snout, 1 to  $1\frac{1}{8}$  in inter-orbital; maxillary reaches opposite eye,  $3\frac{1}{2}$  to  $3\frac{3}{5}$  in head; interorbital  $2\frac{4}{5}$  to  $3\frac{1}{5}$ , broadly convex; preopercle spine along upper edge  $2\frac{4}{5}$  to 4; anterior preopercle spine below well advanced in young and close before large spine with age; preopercle serrae small in young, become variably larger with age. Gill rakers  $5 + 16$ , well compressed, elongately triangular, lanceolate,  $\frac{1}{2}$  of gill filaments, which  $1\frac{1}{2}$  in eye.

Scales 36 to 40 counted between gill-opening and caudal base; 6 or 7 scales above lateral line, 17 or 18 below. Scales with 5 to 9 basal striae, marginal and edge scalloped; apical denticles 20 to 30, each with single long rootlet; circuli very fine.

D. XIII or XIV, 15, I to 17, I, last spine  $1\frac{1}{3}$  to  $1\frac{3}{5}$  in head, tenth ray  $1\frac{1}{6}$  to  $1\frac{1}{4}$ ; A. III, 16, I or 17, I, third spine  $1\frac{1}{3}$  to  $1\frac{2}{3}$ , sixth ray  $1\frac{1}{4}$  to  $1\frac{1}{3}$ ; least depth of caudal peduncle 2 to  $2\frac{1}{10}$ ; caudal rounded convexly behind, 1 to  $1\frac{1}{8}$ ; pectoral 3 to  $3\frac{2}{5}$  in combined head and body; ventral  $2\frac{3}{5}$  to  $3\frac{3}{8}$ .

Back dark brown, also upper surface of head, becoming pale on sides and belly. Iris brown. About 17 to 20 dusky to blackish-brown transverse lines, inclined



Belone capensis (Günther)  
Belone capensis Günther, Cat. Fish.

Brit. Mus., vol. 6, p. 247, 1866 (type  
locality: Cape of Good Hope). —

~~Gilchrist, Marine Invest. South Africa,~~

~~157, 1910 (name)~~ Barnard,

Ann. South African Mus., vol. 21,

pt. 1, p. 255, June 1925 (copied).

Tylosurus capensis ~~Gilchrist and~~

Thompson, Marine Biol. Rep. South

Africa, no. 3, p. 94, 1916 (reference).



Body broad, subcylindrical, free portion of tail compressed, deeper than broad; head  $2\frac{2}{5}$ . Eye less than interorbital, 3 in postorbital; base of premaxillaries depressed and maxillary  $\frac{2}{3}$  hidden by preorbital; teeth rather small, widely set, none on vomer; upper surface of head flat, with very shallow and broad median groove; superciliary region striated.

Scales of moderate size.

D. 14, middle and hinder rays subequal, short, last ending short distance from caudal base; A. 15, like dorsal, basal portion naked; caudal deeply emarginate; pectoral length more than <sup>distance of</sup> opercular margin from orbit; ventral rather small, nearly midway between eye and caudal. Length 330 mm. (Günther.)

Cape Seas.



Belone platyura Bennett

✓ Belone platyura Bennett, Proc. Comm.

Zool. Soc. London, 1831, p. 168 (type locality:

Mauritius). — Jordan and Evermann, Bull.

U. S. Fish Comm., vol. 23, pt. 1, p. 122, fig. 38, 1903

(1905) (Honolulu, Kailua, Samoa). — Jordan

and Seale, Bull. Bur. Fisher., vol. 25, p. 206,

1905 (1906) (Apia). — Kendall and

Goldsborough, Mem. Mus. Comp. Zool.,

vol. 26, p. 250, 1911 (Kambara, Fiji;

Funafuti). — Fowler, Proc. Acad. Nat. Sci.

Philadelphia, 1919, p. 2 (Hawaiian Islands).

— Rendahl, Nat. Hist. Juan Fernandez,



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Skottsberg, vol. 3, Zool. pt. 1, p. 66, 1921  
(Easter Island). — Fowler, Copeia, no.  
122, p. 82, nov. 20, 1922 (Hawaii); Bull.  
Bishop Mus. 22, p. 6, 1925 (Guam);  
26, p. 7, 1925 (Laysan, Lisiansky, Ocean  
Islands); 38, p. 7, 1927 (Christmas, Blake  
Islands, Honolulu); Mem. Bishop Mus.,  
vol. 10, p. 71, 1928 (Honolulu, Faté, Rarotonga,  
Laysan, Palmyra, Funafuti, Society  
Islands, Lipia, Kambara, Hawaii); vol.  
11, no. 5, p. 319, 1931 (compiled); Proc. U. S.  
Nat. Mus., vol. 81, art. 8, p. 3, 1932  
(Niuafoou Island, Tonga Group).



Belone (Eurycaulus) platyura Weber  
and Beaufort, Fishes Indo Austral.

Archipelago, vol. 4, p. 118, 1922 (compiled).

Belone platyura Rüppell, Neue Wirbelth.

Fische, p. 73, pl. 20, fig. 1, 1835 (Massana).

— Valenciennes, Hist. nat. Poiss., vol. 18, p.

<sup>451</sup>  
~~437~~, 1846 (copied). — Bleeker,

Act. Soc. Sci. Ind. Néerl., vol. 2, no. 7, p. (7)

85, 1857 (Amboina). — Günther, Cat. Fish.

Brit. Mus., vol. 6, p. 237, 1866 (Red Sea;

Amboina). — Klunzinger, Verh. zool. bot.

Ges. Wien, vol. 21, p. 577, 1871 (Red Sea).

— Streets, Bull. U. S. Nat. Mus., no. 7, p. 75,



1877 (Honolulu). — Sauvage, Hist.  
Nat. Madagascar, Poiss., p. 526, 1891  
(reference). — Waite, Mem. Austral.  
Mus., no. 3, p. 194, 1897 (Funafuti). —  
Pellegrin, Bull. Mus. Hist. Nat. Paris,  
vol. 4, 1898, p. 228 (Guam). —  
Steindachner, Denks. Akad. Wiss. Wien,  
math.-nat. Kl., vol. 70, p. 512, 1901 (Laysan).  
— Snyder, Bull. U.S. Fish Comm., vol.  
22, p. 521, 1902 (1904) (Honolulu). —  
Seale, Occas. Pap. Bishop Mus., vol. 1,  
no. 15, p. 21, 1902 (Honolulu); vol. 4, no. 1,  
p. 12, 1906 (Faté, New Hebrides). —



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Jordan and Seale, Bull. Bur. Fisher.,  
vol. 25, p. 206, 1905 (1906) ( ).

— Günther, Journ. Mus. Godeffroy,  
vol. 8, pt. 16, p. 349, fig. (head), 1909  
(Red Sea, East Indies, Pelau, Hawaii).

— Regan, Ann. Mag. Nat. Hist., ser. 8,  
vol. 7, p. 332, 1911 (name).

Belone platurus Bleeker, Naturk. Tijds.  
Ned. Indie, vol. 22, p. 101, 1860 (Singapore).

Mastacembelus platurus Bleeker, Atlas  
Ichth. Ind. Néerl., vol. 6, p. 50, pl. (11)

257, fig. 1, 1866 (Singapore; Amboina).



Hemiramphus platurus Seale, Occas.  
Pap. Bishop Mus., vol. 4, no. 1, p. 13, 1906  
(Rarotonga, Cook Islands).

Belone platyurus Jenkins, Bull. U. S.  
Fish Comm., vol. 22, p. 433, 1902 (1903)  
(Honolulu).

Esop bellone (not Linnaeus) Lichtenstein,  
Descript. Animal., Forster, p. 257, 1844  
(Tanna).

Belone carinata Valenciennes, Hist. Nat.  
Poiss., vol. 18, p. 437, 1846 (type locality:  
Guayaquil to Hawaiian Islands). —  
Günther, Cat. Fish. Brit. Mus., vol. 6,



1877 (Honolulu). — Sauvage, Hist. nat.

Madagascar, Poiss., p. 526, 1891 (reference).

— Waite, Mem. Austral. Mus., no. 3, p. 194, 1897 (Funafuti).

— Steindachner, Denks. Akad. Wiss.

Wien, vol. 70, p. 512, 1900 (Laysan). —

Snyder, Bull. U. S. Fish Comm., vol. 22,

<sup>1902</sup>  
p. 521, (Honolulu). — Seale, Occas. Pap.

Bishop Mus., vol. 1, no. 15, p. 21, 1902

(Honolulu). — Jordan and Seale, Bull. Bur.

Fishers., vol. 25, p. 206, 1905 ( ). —

Günther, Journ. Mus. Godeffroy, vol. 8, pt.

16, p. 349, fig. (head), 1909 (Red Sea, East

Indies, Pelau, Hawaii). — Regan, Ann.

Mag. nat. Hist., ser. 8, vol. 7, p. 332, 1911 (name).



p. 236, 1866 (copied). — Schmeltz, Cat.

Mus. Godeffroy, no. 3, p. 11, 1866

(Pacific Ocean); no. 4, p. 25, 1869

(Pacific Ocean).

✓ Belone depressa (not Poey) Günther, Cat.  
Fishes Brit. Mus., vol. 6, p. 235, 1866  
(North West Australia; part). —  
Macleay, Proc. Linn. Soc. New South  
Wales, ser. 2, vol. 5, p. 174, 1881 (on  
Günther). — Saville-Kent, Great Barrier  
Reef, pp. 299, 370, 1893 (Moreton Bay).

Tylosurus depressus McCulloch, Austr.  
Mus. Mem., vol. 5, pt. 1, p. 100, June 29,  
1929 (Queensland?; North West Australia).



been known to pierce the naked  
abdomens of savages. Many are  
well flavored food fishes, though  
largely on account of their greenish  
colored bones are cast aside.



Belone persimilis Günther, Journ. Mus. <sup>214</sup>

Godeffroy, vol. 16, pt. 8, p. 349, fig.

(head)<sub>3, 1</sub><sup>1901</sup> (type locality: Hawaii; Tonga; Yap; North-west Australia).

Belone (Eurycaulus) persimilis Weber  
and Beaufort, Fishes Indo Austral.

Archipelago, vol. 4, p. 118, fig. 46, 1922  
(Flores).

Platybelone dorsalis Whitley, Rec. Austral. Mus.,  
vol. 18, no. 6, p. 335, April 26, 1932 (type locality:  
North-west Australia: on Günther).



trasted and giving variegated appearance,  
especially on left side of fish. Iris  
er gray. Fins pale, dorsal and  
dal little more brownish.

A. N. S. P. No. 54914, Type. Umsinduzi

January 20, 1932.

ier,  
lection Mr. L. A. Day. Length 150 mm.

Diagnosis. Related to Barbus robinsoni



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Depth 18 to  $19\frac{4}{5}$ , body rather broad, cylindrical, more depressed behind or on caudal peduncle so width greater than depth behind dorsal origin; head from snout tip  $2\frac{5}{6}$  to  $2\frac{9}{10}$ , width  $6\frac{1}{4}$  to 7. End of frontal point to eye  $4\frac{1}{2}$  to 5 in rest of snout, wide as long; eye  $1\frac{3}{4}$  to  $1\frac{7}{8}$  in postocular; maxillary reaches front eye edge; interorbital  $1\frac{3}{4}$  to 2 in postocular, level, broad shallow depression medially; bones on top of head rather obscurely striate. Gill rakers IV or V, 3 + 6, XII or 5, X, short points,  $2\frac{1}{2}$  in gill filaments, which  $\frac{1}{3}$  of eye.

Scales 175<sup>+</sup>? to 196 in median axial lateral series to caudal base;



the prolonged last-dorsal ray has been broken and possibly the filament to the upper caudal lobe may also have been present as in my material. Bleeker's Pristipomoides typus is a synonym, likewise his Dentex pristipoma and Mesoprion dentex. Mesoprion multident Day is another synonym:



predorsal 95 to 103 forward to head; 9 rows on cheek. Scales with 34 to 54 close set circuli, complete (likely incomplete with age).

D. II, 11 to II, 13, first branched ray  $5\frac{4}{5}$  to 6 in head from snout tip; A. II, 15 to II, 17, first branched ray  $5\frac{1}{4}$  to  $5\frac{2}{5}$ ; least depth of caudal peduncle  $\frac{1}{2}$  its width or  $2\frac{3}{4}$  to  $3\frac{1}{5}$  in eye; pectoral  $4\frac{1}{2}$  to 5 in head from snout tip; ventral 7 to  $7\frac{3}{4}$ ,  $1\frac{1}{4}$  to  $1\frac{2}{5}$  in postocular.

Brownish to gray or olive above or on back, sides and under surfaces. Iris white. Fins pale, darker terminally.



first ray 3 to  $3\frac{1}{3}$ , last ray 2 to  $2\frac{1}{4}$ , over twice length of penultimate ray; caudal  $1\frac{1}{8}$  with age,  $2\frac{1}{8}$  to  $2\frac{2}{5}$  in combined head and body in young, deeply forked; least depth of caudal peduncle 3 to  $3\frac{1}{8}$  in total head length; pectoral  $1\frac{1}{8}$  to  $1\frac{1}{5}$ ; ventral  $1\frac{1}{3}$  to  $1\frac{2}{5}$ .

Largely pale brown to scarcely paler below. Under surfaces often glossed silvery white. Iris yellowish white to light brown. Fins all dull or pale brownish.

Mauritius, Andamans, Singapore, East Indies, Formosa, China, Japan. Serranus argyrogrammicus Valenciennes, as figured by Sauvage, seems to be the earliest notice of this species. Jordan and Evermann's figure of Platyinius sparus surely is the same as my Sumatra examples. Evidently



Red Sea, Mauritius, Malaya,  
East Indies, Philippines, North  
West Australia, Queensland,  
Melanesia, Micronesia, Polynesia,  
Hawaii, Easter Island.



Whitley has named Günther's  
North-west Australian specimen  
Platybelone dorsalis, chiefly on the  
distinction of but 16 dorsal rays.  
If allowance is made for the first  
2 rays as simple or unbranched,  
the formula would be  $D. \overline{II}, 14$ . As  
this is only one ray more than I have  
found in my materials I can hardly  
believe it of specific importance.

~~I have placed the reference of Belone  
depressa of Günther~~



Strongylura impotens (Ogilby)

Tylosurus impotens Ogilby, Proc. Roy.  
Soc. Queensland, vol. 21, p. 89, 1914.



One example. Anchorage,  
Joumindao Island. February 25,  
1908. Length 47 mm (broken).

One example. Shore above Iloilo  
River. June 2, 1908. Length 80 mm.

U. S. N. M. no. 17983. Honolulu.

Dr. J. H. Street. Length 380 to 402  
mm. Three examples.

Two examples. Sandakan, Borneo.  
February 29, 1908. Length 43 to 44 mm.  
Two examples.

Three examples. Sandakan, Borneo.  
March 1, 1908. Length 47 to 50 mm.  
Three examples.

U. S. N. M. no. 51063. Hawaiian Islands.  
Bureau of Fisheries (04993). Length  
333 mm.

U. S. N. M. no. 52527. Apia, Samoa.  
Bureau of Fisheries (025471). Length 326  
mm.



eye; preopercle edge minutely serrate, serrae little enlarged around angle. Gill rakers 7 or 8 + 15 or 16, lanceolate, slightly longer than gill filaments in young to  $1\frac{1}{8}$  in gill filaments with age or  $1\frac{7}{8}$  in eye.

Scales 47 to 57 in lateral line to caudal base and 4 to 6 more on latter; 7 scales above lateral line, 14 or 15 below, 13 to 17 predorsal, 7 rows on cheek. Suprascapula denticulate, or rough with age. Scales with 9 or 10 basal radiating striae; apical denticles 44 to 90, small, weak points, with 3 to 8 transverse series of basal elements; circuli very fine or minute.

D. X, 11, I, spines rather flexible, fourth  $2\frac{1}{4}$  to  $2\frac{2}{5}$  in total head length, first ray  $2\frac{7}{8}$  to 3, last ray  $1\frac{7}{8}$  to 2; A. III, 8, I, third spine  $3\frac{1}{2}$  to  $4\frac{1}{8}$ ,



U. S. N. M. No. 52699. Hawaiian  
Islands. Bureau of Fisheries  
(04994). Length 376 mm. As  
Tylosurus giganteus.

~~U. S. N. M. No. 52699. Hawaiian  
Islands~~

U. S. N. M. No. 65763. Kambara,  
Fiji. Albatross Collection (A136).  
Length 313 to 384 mm. Three  
examples.

U. S. N. M. No. 92251. Hawaiian  
Islands. July 1930.  
Length 464 mm.

A. N. S. P. Nos. 7573 and 7574.  
Hawaiian Islands. Dr. J. K. Townsend.  
Length 400 to 439 mm. These two examples  
among the first of the species obtained  
in the Hawaiian Islands, several years  
before Valenciennes described it as  
Belone carinata.



817

Anthias multident Day, Fishes of  
India, pt. 1, 1875, p. 27, pl. 7, fig. 4.

Depth 3 to  $3\frac{2}{5}$ ; head  $2\frac{5}{6}$  to  $3\frac{1}{5}$ , width  $1\frac{7}{8}$  to  $2\frac{2}{5}$ . Snout 3 to  $3\frac{1}{5}$  in head from snout tip; eye  $3\frac{1}{3}$  to  $4\frac{1}{5}$ ,  $1\frac{1}{10}$  to  $1\frac{2}{5}$  in snout, little greater than interorbital in young to  $1\frac{1}{2}$  with age; maxillary reaches  $\frac{1}{6}$  to  $\frac{2}{5}$  in eye, expansion  $2\frac{1}{5}$  to  $2\frac{2}{5}$  in eye, length  $2\frac{2}{5}$  to  $2\frac{2}{3}$  in head from snout tip; teeth fine, villiform, in narrow bands in jaws in 4 or 5 irregular series and outer enlarged row; young with distinct pair of wide set canines in front of each jaw; triangular band of villiform teeth on vomer and band on each palatine, but tongue edentulous; interorbital 3 to 4, broadly convex, often flattened medially; infraorbital width at maxillary end 2 to  $2\frac{1}{8}$  in



221

Belone natalensis Günther

Belone natalensis Günther, Cat. Fishes  
Brit. Mus., vol. 6, p. 243, 1866 (Type  
locality: Port Natal). — Sauvage,

Hist. nat. Madagascar, Poiss., p. 526,  
1891 (reference). — Gilchrist, Marine

Investig. South Africa, p. 152, 1901  
(reference). — Barnard, Ann. South  
African Mus., vol. 21, pt. 1, p. 254, June  
1925 (Natal).

Tylosurus natalensis Gilchrist and  
Thompson, Ann. Durban Mus., vol. 1, pt.  
4, p. 310, 1917 (compiled).



222

Body compressed, depth less than pectoral fin; free portion of tail not compressed, subtriangular, back of tail broad and depressed; head nearly 3. Eye less than interorbital,  $2\frac{2}{3}$  in postorbital; base of premaxillaries depressed and maxillaries  $\frac{2}{3}$  hidden by preorbital; teeth moderate, none on vomer or tongue; upper surface of head with wide, shallow median groove, tapering behind, widening in front; superciliary region faintly striated.

Scales thin, rather small, adherent. D. 17 or 18, middle and hinder rays subequal, short, last ending at considerable distance from caudal base; A. 24, like dorsal; caudal truncate; pectoral greater than distance of opercular margin from orbit; ventral nearly midway between caudal base and front eye edge. Length 512 mm. (Günther.)

Natal coast.



223

Family Scomberesocidae

Body elongate compressed. Head with both jaws more or less prolonged, forming slender beak, upper jaw always longer. Eye nearly median, high. Teeth weak, pointed. Maxillary and premaxillary firmly joined. Gill rakers slender, numerous, long. Pharyngeal bones with fourth upper on each side absent or fused with third, which greatly enlarged, distinct from its fellow and covered with tricuspid teeth; second with simple teeth; first toothless;



lower ones united, form triangular bone with concave surface, covered with tricuspid teeth. Scales very small, thin deciduous, with suggestion of mackerel. Dorsal and anal low, alike, each followed by 4 to 6 detached finlets. Paired fins small.

A small group of pelagic fishes, usually found in large schools swimming near or at the surface in temperate seas.

### Analysis of Genera

- a.<sup>1</sup> Beak short, upper jaw of adult not extended and lower jaw with only short, flexible tip. Cololabis.
- a.<sup>2</sup> Beak long, both jaws extended and slender. Scomberesox.



Genus Cololabis Gill

Cololabis Gill, Proc. U. S. Nat. Mus.,  
vol. 18, p. 176, 1895. (Type, Scombreox  
brevirostris Peters, orthotypic.)

Jaws extended into a short beak,  
only half length of rest of head.

Greatly like Scombreox and  
differing only in the short beak.



Cololabis saira (Brevoort)

Scomberesox saira Brevoort, Narrat. Exped. China Japan, Perry, p. 281, pl. 7, fig. 4, 1856 (type locality: Simoda, Japan).

Scomberesox saira Ishikawa and Matsuura, Prelim. Cat. Fishes Mus. Tokyo, p. 18, 1897 (reference).

Cololabis saira Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 60, 1901 (reference). — Jordan and Starks, Proc. U. S. Nat. Mus., vol. 26, p. 537, 1903 (Awa, Otaru, Aomori, Hakodate).

— Tanaka, Fig. Descr. Fishes Japan, vol. 5-10, p. , pl. 12, 1912.

Matsuura, Cat. Zool. Spec. Mus. Tokyo, Vertebr., p. 165, 1920 (Tokyo). — Schmidt, Trans. Pac. Comm. Acad. Sci. U. S. S. R., p. 36, 1931 (Nagasaki). — Anonymous, Ill. Jap. Aquat. Plants Anim., vol. 1, pl. 21, fig. 2, 1931.



Cololabis saira (Brevoort)

Scomberesox saira Brevoort, Narrat. Exped. China Japan, Perry, p. 281, pl. 7, fig. 4, 1856 (type locality: Simoda, Japan).

Scomberesox saira Ishikawa and Matsuura, Prelim. Cat. Fishes Mus. Tokyo, p. 18, 1897 (reference).

Cololabis saira Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 60, 1901 (reference). — Jordan and Starks, Proc. U. S. Nat. Mus., vol. 26, p. 537, 1903 (Awa, Otaru, Aomori, Hakodate).

wiss.

— Franz, Abhandl. Akad. München, vol. 4, Suppl. band 1, p. 24, 1911 (Yokohama, Aburatsubo, Todohokkei). — Izuoka and Matsuura, Cat. Zool. Spec. Mus. Tokyo, Vertebr., p. 165, 1920 (Tokyo). — Schmidt, Trans. Pac. Comm. Acad. Sci. U. S. S. R., p. 36, 1931 (Nagasaki). — Anonymous, Ill. Jap. Aquat. Plants Anim., vol. 1, pl. 21, fig. 2, 1931.



Paired first black. ♂



227

Scombrex brevirostris Peters, Monatsb.  
Akad. Wiss. Berlin, 1866, p. 521  
(type locality: Tomales Bay, California).

Cololabis brevirostris Jordan and Evermann,  
Bull. U. S. Nat. Mus., no. 47, pt. 1, p. 726,  
1896 (California). — Fowler, Proc. Acad.  
Nat. Sci. Philadelphia, vol. 75, 1923,  
p. 287 (Venice, California), p. 296 (La Jolla,  
California).

Scombrex saurus (not Walbaum) Hystrom,  
Bih. Svensk. Vet. Akad. Handlingar,  
Stockholm, vol. 13, no. 4, p. 41, 1887  
(Nagasaki).



228

Depth  $7\frac{1}{2}$  to 9; head  $4\frac{1}{10}$  to  $4\frac{2}{5}$ , width  $3\frac{2}{3}$  to 4. Snout  $2\frac{2}{3}$  to 3 in head from snout tip; eye  $5\frac{3}{4}$  to 7, 2 to  $2\frac{3}{4}$  in snout, 1 to  $1\frac{1}{4}$  in interorbital; maxillary reaches  $1\frac{1}{2}$  to eye, length  $3\frac{2}{3}$  to  $4\frac{1}{8}$  in head from snout tip; lower jaw extends but very slightly forward of upper jaw, length to eye  $2\frac{1}{2}$  to  $2\frac{3}{5}$  in total head; interorbital  $5\frac{1}{4}$  to  $6\frac{1}{2}$  in head, moderately high, depressed medially. Gill rakers  $8 + 40$ , upper and lowest 2 rudimentary, others lanceolate and  $1\frac{1}{5}$  in eye.

Scales 100 to 109 in median lateral series axially to caudal base; 15 or 16 above lateral line to dorsal origin, 98 to 100 predorsal of which 76 to 78



Depth  $1\frac{1}{3}$  to  $1\frac{3}{5}$ ; head 3 to  $3\frac{1}{4}$ , width 2 to  $2\frac{1}{5}$ .  
 Snout  $2\frac{2}{5}$  to  $2\frac{1}{2}$  in head; eye  $3\frac{1}{3}$  to 4,  $1\frac{2}{5}$  to  $1\frac{3}{4}$  in snout, 1 to  $1\frac{1}{4}$  in interorbital; maxillary  $\frac{2}{3}$  to  $\frac{3}{4}$  in snout, 4 to 5 in head; interorbital  $3\frac{1}{2}$  to  $3\frac{3}{4}$ , broadly convex; above each eye a strong, short, horny spine, less than pupil and little developed in smaller examples; with age obtuse, short bony tubercle at predorsal. Gill rakers 2 + 10, short points, about 10 of gill filaments, which equal eye.

Tuber 55 or 56 in lateral line to caudal base; 12 to 14 scales above lateral line, 28 or 29 below. Scales with 10 to 12 basal radiating striae, and 0 to 6 in complete auxiliaries; apical denticles 80 to 145, with 13 to 22 transverse series of basal elements; circuli fine.

D. XII, 27, I or 28, I, fourth spine  $1\frac{2}{3}$  to  $2\frac{1}{8}$  in combined head and body, sixth ray



forward from dorsal to occiput  
or opposite hind preopercle  
edge. Scales caducous, often  
largely fallen in preserved  
examples. Scales with 0 to 1  
basal radiating stria; circuli  
fine 70 to 75, incomplete  
apically.

D. II, 9 or II, 10 - 5 or 6, first  
branched ray  $3\frac{7}{8}$  to  $4\frac{3}{4}$  in total  
head length; A. II, 11 or 12 - 6,  
first branched ray  $4\frac{3}{4}$  to  $5\frac{2}{5}$ ;  
caudal  $1\frac{3}{4}$  to  $2\frac{1}{4}$ ; least depth  
of caudal peduncle  $8\frac{2}{5}$  to 9;  
pectoral  $2\frac{2}{5}$  to  $2\frac{5}{8}$ ; ventral  
 $3\frac{1}{5}$  to  $3\frac{1}{4}$ .

Back brown, sides and  
below silvery white, line of  
demarcation high on side.



Genus Holacanthus Lacépède.

Holacanthus Lacépède, Hist. Nat. Poiss.,

vol. 4, 1803, p. 525. Type Chaetodon

tricolor Bloch, designated by Bleeker,  
Arch. Néerl. Sci. Nat., vol. 12, 1876, p. 307.

Genicanthus Swainson, Nat. Hist. Animals,

vol. 2, 1839, p. 212. Type Holacanthus

lamarck Lacépède, designated by Swain,

Proc. Acad. Nat. Sci. Phila., 1882, p. 273.

Centropyge Kaup, Ich. Naturg., band 26,

1856, p. 138. Type Holacanthus tibicen

Cuvier, monotypic.

Chaetodontoplus Bleeker, l.c. Type

Holacanthus septentrionalis Schlegel,

orthotypic.

Acanthochaetodon Bleeker, l.c., p. 308.

Type Holacanthus annularis Lacépède,

orthotypic.

Angelichthys Jordan and Evermann, Rep. U.S. Fish  
Comm., pt. 21, 1895 (1896), p. 420. Type Chaetodon  
ciliaris Linnaeus, orthotypic.



Iris silvery white. Dorsal and caudal pale brown, other fins still paler.

Japan, California. A comparison with the California example listed below fails to show any differences.



32697 U.S.N.M. Indian Archipelago.  
 Leiden Museum. Length 168 mm.

43939 U.S.N.M. Mauritius.  
 Colonel Nicholas Pike. Length 125 to 243  
 mm. 4 examples.

51088 U.S.N.M. Hawaii. Bureau of  
 Fisheries. Length 170 mm.

52471 U.S.N.M. Samoa. Bureau of  
 Fisheries. Length 138 mm.

52798 U.S.N.M. Hawaii. Bureau of  
 Fisheries. Length 163 mm.

55027 U.S.N.M. Honolulu. Albatross  
 Collection. Length 150 to 163 mm. 2 examples.

55961 U.S.N.M. Bacm, Philippines.  
 Bureau of Fisheries. Length 108 mm.

55976 U.S.N.M. San Fabian. Bureau  
 of Fisheries. Length 52 mm.

71692 U.S.N.M. Lafa, Lorrain.  
 Albatross Collection 1906. Length 62 to 70 mm.  
 2 examples.

82779 U.S.N.M. Fiji. Wilkes Exploring Expedition. Length 38 to 50 mm.  
 2 examples



231  
U. S. N. M., No. 27209. California.  
D. S. Jordan. Length 350? mm  
(caudal broken). As Scombrox  
brevirostris.

U. S. N. M., No. 44926. Japan.  
Government of Japan. Length  
298 to 320 mm. 3 examples.

U. S. N. M., No. 50744. Otaru,  
Hokkaido. D. S. Jordan and J. O.  
Snyder. Length 114 to 135 mm.  
8 examples.



spines to and including ventrals;  
black band after fourth dorsal spine  
to eleventh, obliquely back and downward  
and including posterior half of anal.  
Anal with spines and edge black.  
Tips of last 4 dorsal spines, all of  
soft dorsal, caudal and pectoral  
lemon yellow. Produced dorsal spine  
pure white with front edge dusky,  
white extending below and including  
anal. Breast and head silvery.

2029 (D. 5147)

February 16, 1908. Length 42 mm.

A 930. Rodepo and Paejogo Islands, Dutch  
East Indies. November 16, 1909. Length 168  
mm. Bands alternately white and brown,  
central white band continued through extended  
dorsal ray. Ends of dorsal, caudal and  
pectoral lemon yellow.



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Genus Scomberesox Lacépède

Scomberesox Lacépède, Hist. nat. Poiss.,  
vol. 5, p. 344, 1803. (Type Scomberesox  
camperi Lacépède, monotypic.)

Scomberesox Duméril, Zool. Anal.,  
p. (148) 342, 1806. (Type Scomberesox  
camperi Lacépède.)

Sayris Rafinesque, Carrat. Animal.  
Sicil., p. 60, 1810. (Type Sayris  
recurvirostra Rafinesque = Esox saurus  
Walbaum, designated by Jordan and  
Evermann, General of Fishes, pt. 1, p. 81, 1917.)

Grammiconotus Costa, Annuario Mus.  
Zool. Napoli, <sup>vol. 1,</sup> p. 55, 1862. (Type  
Grammiconotus bicolor Costa, monotypic.)



Body long. Both jaws extended into very slender pointed beak, in adult longer than rest of head. Young with short jaws, lengthen into beak with age. Air bladder large.

Species few.



4808 to 4810, 19970, 19971. Polloc,  
Mindanao. May 22, 1908. Length 75 to  
92 mm.

358. Port Calton. December 15, 1908.  
Length 95 mm.

10300, 10338, 10339, <sup>11025,</sup> 22742. Port Maricaban.  
July 21, 1908. Length 65 to 99 mm.

16535. Port Matalvi, Luzon. November  
22, 1908. Length 82 mm.

4602. Port Palapag. June 3, 1909.  
Length 102 mm.

12657 and 12658. Port San Pio Quinto,  
Carriguin Island. November 10, 1908.  
Length 93 to 105 mm.

751. Port Usan, West Pinan Island.  
December 17, 1908. Length 77 mm.

634. Port Tilig. July 15, 1908. Length  
76 mm.

20927. Puerta Princesa, Palawan Island.  
April 5, 1909. Length 89 mm.



234

Scomberesox forsteri (Valenciennes)

Scomberesox forsteri Valenciennes, Hist.  
Nat. Poiss., vol. 18, p. 481, 1846 (type  
locality: New Zealand). — Günther,

Cat. Fishes Brit. Mus., vol. 6, p. 258,  
1866 (New Zealand). — Hutton, Fishes  
New Zealand, p. 53, 1872. — Castelnau,

Rec. London Intern. Exhib., pt. 7, no. 5, 1873,  
p. 16 (Victoria). — Macleay, Proc. Linn.  
Soc. New South Wales, vol. 5, pt. 2, p. 180,  
1881 (Melbourne and Sydney). —

Ogilby, Handbook of Sydney, p. 124, 1898. —  
Jordan and Snyder, Annot. Zool. Japon.,  
vol. 3, p. 61, 1901 (reference). — Stead,  
Fishes of Australia, p. 64, 1906. —  
McCulloch, Biol. Res. Endeavour,  
p. 30, 1909-10 (120 miles south west of  
St. Francis Island, South Australia).



Scomberesox forsteri McCulloch,  
Austral. Mus. Mem., No. 5, pt. 1, p. 99,  
June 29, 1929 (New South Wales, Victoria,  
South Australia, Tasmania, New Zealand).

Esox saurus (not Walbaum) Lichtenstein,  
Descript. Animal., p. 143, 1844.



Depth  $9\frac{1}{4}$ ; head  $3\frac{1}{3}$ , width  $5\frac{1}{2}$ . Snout  $1\frac{2}{3}$  in head from snout tip; eye  $9\frac{4}{5}$ , 6 in snout,  $1\frac{1}{3}$  in interorbital; beak not completely closing basally, lower jaw little longer; maxillary reaches  $7\frac{1}{8}$  in snout, length from snout tip  $1\frac{7}{8}$  in head from snout tip; interorbital  $8\frac{1}{5}$ , low, broadly convex. Gill rakers  $6 + 40$ , upper or ceratobranchial rudimentary, others lanceolate or  $1\frac{3}{4}$  in eye.

Scales 90? (pockets) in median lateral or axial series; 14? above lateral line to dorsal origin, 104 predorsal of which 76 forward opposite upper hind preopercle edge. Scales all fallen.

D. II, 8-5, first branched ray  $6\frac{1}{8}$  in total head length;



31 and 3922. Malapascua Island.

March 16, 1909. Length 100 to 105 mm.

997. Maricaban Island. January 20, 1908. Length 92 mm.

9317. Mompog Island, Anabayan Island. March 2, 1909. Length 91 mm.

4567. Mompog Island. March 3, 1909. Length 78 mm.

1100, 1229 to 1231, 21966. Murciélagos Bay, Mindanao. August 9, 1909. Length 60 to 80 mm.

4859 and 4860. Murciélagos Bay. August 21, 1909. Length 78 to 89 mm.

3609 and 15251. Near Palag Bay, Luzon. June 16, 1909. Length 70 to 76 mm.

3905, 22794, 22795. Opol, Mindanao Island. August 4, 1909. Length 66 to 72 mm.

897. Pagapas Bay. February 20, 1909. Length 65 mm.

276, 277, 19070. Paluan Bay, Mindoro.

December 11, 1908. Length 72 to 87 mm.

15950. Pangasinan Island. February 13, 1908. Length 67 mm.



237

A. II, 10 - 6, first branched ray  
7; caudal  $2\frac{1}{2}$ ; least depth of  
caudal peduncle  $11\frac{5}{8}$ ; pectoral  
 $4\frac{1}{2}$ ; ventral  $5\frac{1}{3}$ .

Back brown, sides paler,  
evidently silvery in life though  
now stained darker. Iris  
grayish. Fins brownish.

South Australia, Victoria, New  
South Wales, Tasmania, New Zealand.

U. S. N. M., no. 59928. Port Jackson,  
N. G. Stead. Length 335 mm.



453. Doc Can Island. January 7, 1910. Length 86 mm. 704

4635. Grande Island Reef, Subig Bay. January 8, 1908. Length 105 mm.

4812. Gomomo Island. December 3, 1909. Length 87 mm.

22809 and 22810. Jolo. March 6 - 7, 1908. Length 86 to 94 mm.

4740. Kapopokang Island. December 28, 1909. Length 73 mm.

550. Kayoa' Island. November 29, 1909. Length 85 mm.

3642. Mactan Island. March 25, 1909. Length 93 mm.

22043. Maganas, Lagonoy, Gulf of Luzon. June 17, 1909. Length 77 mm.

9880 and 21446. Maitara Island. November 26, 1909. Length 87 to 100 mm.

21287 and 4831. Malamipa Island. September 8, 1909. Length 63 to 68 mm.



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Scomberesox saurus (Walbaum)

Esox saurus Walbaum, Artedi Pisc., vol. 3, p. 73, 1792 (type locality: Cornwall, England; on Saury Pike Pennant, British Zool., vol. 3, p. 325, 17).

— Schneider, Syst. Ichth. Bloch, p. 394, 1801 (Cornwall; Mediterranean).

Scomberesox saurus Bleeker, Nederl.

Tijds. Nederl. Indië, vol. 21, p. 56, 1860 (Cape of Good Hope). — Günther, Cat.

Fishes Brit. Mus., vol. 6, p. 257, 1866 (Cape of Good Hope). — Gillchrist, Marine Investig. South Africa, p. 152, 1901 (name). — Lempe, Deutsch. Südpolar Exped., Fische, vol. 15, p. 205, 1914 (between Cape of Good Hope and Kerguelen). — Barnard, Ann. South Afric. Mus., vol. 21, pt. 1, p. 259, fig. 16 (heads), June 1925 (St. Helena Bay, Table Bay and Cape Point to Mossel Bay).



Scomberesox saurus Borodin, Bull.  
Vanderbilt Marine Mus., vol. 1, art. 2,  
p. 46, 1930 (Red Sea).

Scomberesox camperii Lacépède, Hist. nat.  
Poiss., vol. 5, pp. 344, 345, pl. 6, fig. 3, 1803  
(type locality: no locality).

Sayris serrata Rafinesque, Carrat. Animal.  
Sicil., p. 61, 1810 (type locality: Sicily).

Sayris recurvirostra Rafinesque, Carrat.  
Animal. Sicil., p. 61, 1810 (type locality:  
Sicily).

Sayris hians Rafinesque, Carrat. Animal.  
Sicil., p. 61, pl. 9, fig. 1, 1810 (type locality:  
Sicily).

Sayris bimaculatus Rafinesque, Carrat.  
Animal. Sicil., p. 62, 1810 (type locality:  
Sicily).

Sayris serratus Rafinesque, Carrat.  
Animal. Sicil., p. 62, 1810 (on Rondelet).



Scomberesox storeri De Kay, New York  
Fauna, vol. 3, p. 229, pl. 35, 1844  
(type locality: Newfoundland <sup>fig. 3,</sup> Banks;  
Massachusetts; New York).

Grammiconotus Costa, Annuario Mus.  
Zool. Napoli, vol. 1, p. 55, pl. 1, fig. 4,  
1864 (type locality: Naples).



241

Depth  $8\frac{1}{2}$  to  $9\frac{1}{2}$  (young); head  $3\frac{4}{5}$  to  $4\frac{1}{4}$ , width 5 to 6. Snout  $1\frac{3}{5}$  to  $2\frac{1}{4}$  in head from snout tip; eye 4 to 9,  $1\frac{2}{3}$  to  $5\frac{2}{5}$  in snout, greater than interorbital in young to  $1\frac{1}{4}$  or subequal with age; beak not completely closing basally, short in young, much longer with age and lower jaw longer; maxillary reaches  $\frac{1}{2}$  to eye in young,  $\frac{4}{5}$  with age, length from snout tip  $1\frac{9}{10}$  to  $2\frac{1}{4}$  in head from snout tip; interorbital subequal with age, low, nearly level. Gill rakers 9+41, upper or ceratobranchial rudimentary, others lanceolate or  $1\frac{3}{5}$  in age.

Scales 115 to 120 in medial lateral series axially to caudal base; 14 or 15 above lateral line



669

18509. Cammahala Bay, Ragay Gulf,  
in small stream. March 11, 1909. Length  
47 mm.

4748:

~~4748~~ Cebu market. August 27-  
28, 1909. Length 31 to 37 mm. 5 examples.

A 1541. Soc Can Island. January 7, 1910.  
Length 152 mm.

8243, 8248, 8249. Galvaney Island,  
Ragay Gulf, Luzon. March 9, 1909. Length  
130 to 170 mm.

5195. Jolo market. March 7, 1908. Length  
167 mm.

11677. Mariveles Bay. January 30, 1909.  
Length 88 mm.

8425. Pandanon Island. March 23, 1909.  
Length 136 mm.

4748 and 4753. Subig Bay. January 7, 1908.  
3 examples. Length 24 to 92 mm. Black bar  
between eyes and black above snout. Black  
band from front of dorsal and first 3



to dorsal origin, 100 to 103  
 predorsal or 70 to 73 forward  
 from dorsal to occiput or  
 opposite hind vertical edge of  
 preopercle. Scales very caducous,  
 most all fallen. Scales with  
 D or 1 short basal radiating  
 striae; circuli 16 to 70, not  
 extended apically.

D. II, 8 or II, 9 — 5 or 6, first  
 branched ray 5 to  $5\frac{1}{4}$  in total  
 head length; A. II, 10 or II, 11 — 6 or  
 7, first branched ray 6 to  $6\frac{1}{2}$ ;  
 caudal 2 to  $2\frac{4}{5}$ ; least depth of  
 caudal peduncle  $10\frac{3}{4}$  to  $11\frac{1}{2}$ ;  
 pectoral 4 to  $4\frac{7}{8}$ ; ventral  $4\frac{1}{5}$   
 to  $4\frac{9}{10}$ .

Back drab brown, sides and  
 below silvery white, line of  
 demarcation high on side.



least depth of caudal peduncle  $2\frac{3}{4}$  to 3; caudal truncate, hind edge slightly convex or expanded,  $1\frac{2}{3}$  to  $1\frac{1}{2}$ ; pectoral  $2\frac{4}{5}$  to 3 in combined head and body; ventral  $2\frac{3}{5}$  to  $3\frac{1}{4}$ .

Largely whitish. Broad blackish brown band from front of spinous dorsal, widening below to include pectoral base and all of postventral space, also extended below along front or lower edge of anal. Another similar band, little more inclined, from middle of spinous dorsal down to include posterior half of anal. Pectoral whitish, like caudal. Ventral black. Iris whitish.

Red Sea, Zanzibar, Mozambique, Natal, Mauritius, Réunion, Seychelles, India, Andamans, East Indies, Philippines, China, Japan, Riu Kiu, Queensland, Polynesia, Hawaii.



243

Iris silvery white. Dorsal and caudal pale brown, other fins still paler or whitish.

Atlantic Ocean, Mediterranean, southern Indian Ocean. Reported from the Red Sea by Morodin.

A. S. N. M., No. 13164. Cape Cod, Massachusetts. E. G. Blackford.  
Length 270 mm.



703  
11854. Caracaran, Batam Island.  
June 8, 1909. Length 86 mm.

847. Cataringan Bay. April 18, 1908.  
Length 102 mm.

3586. Cammahala Bay, Ragay Gulf.  
March 11, 1909. Length 94 mm.

246 to 248. Caxisigan. December 29, 1909.  
Length 88 to 100 mm.

7828. Cebu market. April 7, 1908.  
Length 91 mm.

22147. Cebu market. August 28, 1909.  
Length 68 mm.

7432. Dalanganem Island. April 8,  
1909. Length 100 mm.

22937. Danawan Island, Mindanao.  
August 9, 1909. Length 95 mm.

21456 and 21457. Danawan Island and  
Si Amil Island. September 27, 1909.  
Length 86 to 92 mm.



U. S. N. M., no. 13165. Cape Cod, <sup>244</sup>  
Massachusetts. E. G. Blackford.  
Length 280 to 310 mm.

U. S. N. M., no. 19852. Wood's Holl,  
Massachusetts. V. N. Edwards. Length  
260 to 290 mm. 4 examples.

U. S. N. M., no. 19853. Wood's Holl.  
V. N. Edwards. Length 265 to 274 mm.  
3 examples.

U. S. N. M., no. 20751. Newport,  
Rhode Island. Samuel Powell. Length  
241 to 278 mm. 2 examples.

U. S. N. M., no. 22385. Halifax,  
Nova Scotia? J. M. Jones. Length 373  
mm.

U. S. N. M., no. 23770. Massachusetts.  
U. S. F. Comm. Length 240? mm.

U. S. N. M., no. 23917. Lat.  $44^{\circ}3'N.$ ,  
Long.  $58^{\circ}26'W.$  G. H. Johnson. Length  
373 mm.



702  
14891 and 22114. Alimango Bay,  
Burias Island. March 5, 1909.

Length 77 to 99 mm.

20488. Batan Island. June 5, 1909.

Length 80 mm.

3608. Biri Channel. June 1, 1909.

Length 88 mm.

1 example. Buana Bay, Talajit Island.  
March 15, 1909. Length 127 mm.

1157. Busin Harbor. April 23, 1908.

Length 95 mm.

3621. Busin Harbor. March 7, 1909.

Length 87 mm.

288 and 3629. Busin Harbor. March 8,  
1909. Length 76 to 92 mm.

6067. Cagayanes Island. March 31, 1909.

Length 88 mm.

3915 and 15077. Capulaan Bay, Pagbilao  
Island. February 24, 1909. Length 66 to  
94 mm.



U. S. N. M., no. 24727 to 24728.  
Massachusetts. U. S. F. Comm. Length  
273 to 278 mm. 2 examples.

U. S. N. M., no. 28615 and 28616.  
Grand Banks. Gloucester Donation.  
Length 280? to 283? mm. 2 examples.

U. S. N. M., no. 31826. Fifty miles  
south of Gay Head, Massachusetts.  
Collins. Length 310? mm.

U. S. N. M., no. 38747. St. Thomas,  
West Indies. A. K. Ruse. Length 72  
mm.

U. S. N. M., no. 40050. Naples.  
Florence Museum. Length 255 mm.

U. S. N. M., no. 48453. Italy.  
S. E. Meek. Length 185 to 195 mm.  
2 examples.

U. S. N. M., 1 example. Mouth of Bay  
of Chaleux, Gulf of St. Lawrence.  
P. A. Taverner. Length 347 mm.



701  
Kind edge of caudal very narrowly  
whitish. Paired fins brown.

Red Sea, East Indies. In alcohol our  
examples all show the dark opercular  
border more contrasted than Bleeker's  
figure, though most of the gray  
spots have faded from the cheeks.  
The anterior portion of the body is  
also much paler and more contrasted.  
The preopercular spine is quite variable,  
often asymmetrical or short on one  
side of the head and long on the  
other.